

Burnal report

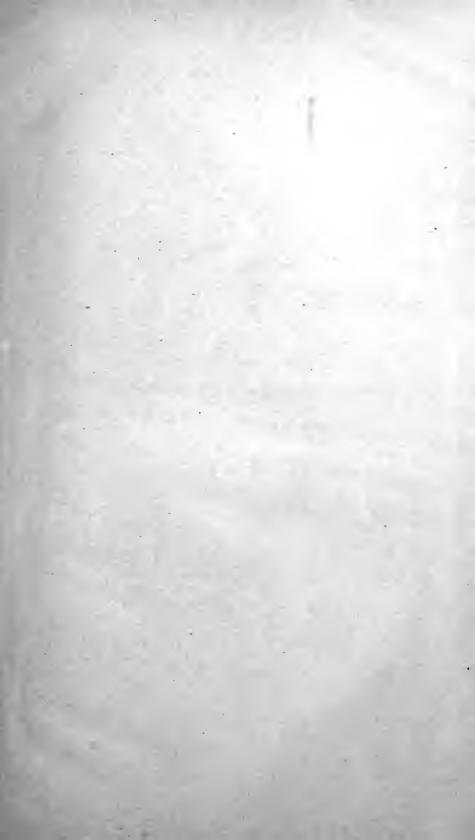
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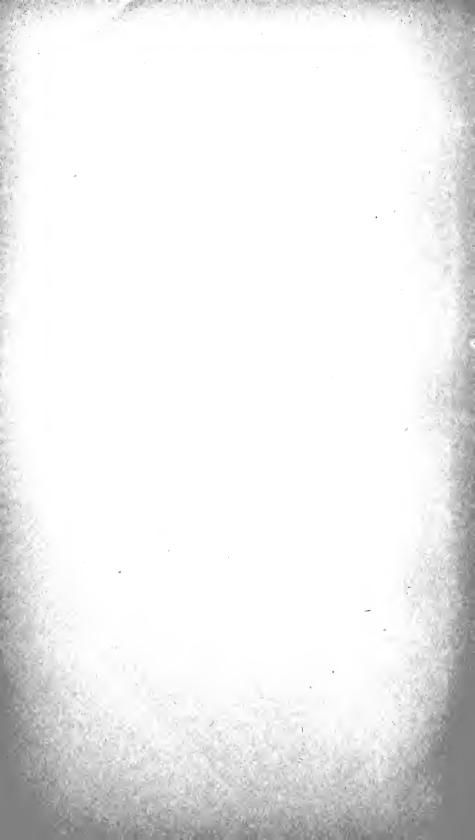


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# EIGHTH BIENNIAL REPORT OP THE NORTH CAROLINA BOARD OF HEALTH, 1899—1900. RALEIGH: EDWARDS & BROUGHTON AND F. M. UZZELL, STATE PRINTERS. PRESSES E. M. UZZELL, 1900.



Compliments of

North Carolina Board of Slealth.



### EIGHTH BIENNIAL REPORT

OF THE

### NORTH CAROLINA

# BOARD OF HEALTH,

1899-1900.

RALEIGH:

EDWARDS & BROUGHTON AND E. M. UZZELL, STATE PRINTERS.
PRESSES E. M. UZZELL.

1900.

## MEMBERS OF THE BOARD.

# ELECTED BY THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA.

George Gillett Thomas, M. D., President	Wilmington,
S. Westray Battle, M. D.	Asheville.
HENRY W. LEWIS, M. D.	_Jackson.
HENRY H. Dodson, M. D.	Milton.
APPOINTED BY THE GOVERNOR.	
*Charles J. O'Hagan, M. D.	Greenville.
J. L. Nicholson, M. D.	Richlands.
ALBERT ANDERSON, M. D.	Wilson.
A. W. Shaffer, Sanitary Engineer	Raleigh.

RICHARD H. Lewis, M. D., Secretary and Treasurer ------Raleigh.

The term of all the members expires May, 1901.

11111

<sup>\*</sup>Deceased.

# LIST OF COUNTY SUPERINTENDENTS OF HEALTH IN THE STATE OF NORTH CAROLINA, DECEMBER 31, 1900.

Alamance	Dr. T. S. Faucette.
Alexander	Dr. T. F. Stevenson.
Alleghany	
Anson	Dr. E. S. Ashe.
Ashe	
Beaufort	Dr. P. A. Nicholson.
Bertie	Dr. H. V. Dunstan.
Bladen	
Brunswick	Dr. J. A. McNeill.
Buncombe	Dr. James Sawyer.
Burke	Dr. J. L. Laxton.
Cabarrus	Dr. D. G. Caldwell.
Caldwell	Dr. A. A. Kent.
Camden	
Carteret	Dr. F. M. Clark.
Caswell	Dr. S. A. Malloy.
Catawba	Dr. Geo. H. West.
Chatham	
Cherokee	Dr. J. F. Abernathy.
Chowan	
Clay	Dr. J. M. Sullivan.
Cleveland	Dr. B. H. Palmer.
Columbus	Dr. I. Jackson.
Craven	Dr. R. DuVal Jones.
Cumberland:	Dr. J. Vance McGougan.
Currituck	Dr. H. M. Shaw.
Dare	Dr. W. B. Fearing.
Davidson	Dr. Joel Hill.
Davie	Dr. James McGuire.
Duplin	
Durham	
Edgecombe	
Forsyth	
Franklin	
Gaston	
Gates	Dr. W. O. P. Lee.
Graham	Dr. R. J. Orr.
Granville	Dr. S. D. Booth.

GreenDr. Joseph E. Grimsley.	
Guilford Dr. Edmund Harrison.	
HalifaxDr. I. E. Green.	
HarnettDr. O. L. Denning.	
HaywoodDr. F. M. Davis.	
Henderson Dr. J. G. Waldrop.	
Hertford Dr. John W. Tayloe.	
HydeDr. E. H. Jones.	
IredellDr. Henry F. Long.	
JacksonDr. Wm. Self.	
JohnstonDr. L. D. Wharton.	
Johnston	
Jones Dr. S. E. Koonce.	
LenoirDr. W. T. Parrott.	
Lincoln Dr. T. F. Costner.	
McDowell	
MaconDr. F L. Siler.	
Madison Dr. Jas. K. Hardwicke.	
MartinDr. W. H. Harrell.	
MecklenburgDr. F. M. Winchester.	
MitchellDr. C. E. Smith.	
MontgomeryDr. M. P. Blair.	
MooreDr. Gilbert McLeod.	
NashDr. J. P. Battle.	
New HanoverDr. W., D. McMillan.	
NorthamptonDr. H. W. Lewis.	
OnslowDr. E. L. Cox.	
OrangeDr. C. D. Jones.	
PamlicoDr. G. A. Caton.	
PasquotankDr. H. T. Aydlett.	
PenderDr. L. L. Ardrey.	
PerquimansDr. C. C. Winslow.	
PersonDr. J. A. Wise.	
PittDr. C. O'H. Laughinghous	se.
PolkDr. Earle Grady.	
RandolphDr. T. T. Ferree.	
RichmondDr. J. M. Ledbetter.	
RobesonDr. H. T. Pope.	
RockinghamDr. Sam Ellington.	
RowanDr. W. L. Crump.	
RutherfordDr. W. A. Thompson.	
SampsonDr. R. E. Lee.	
ScotlandDr. A. W. Hamer.	
StanlyDr. V. A. Whitley.	
StokesDr. W. L. McCanless.	
SurryDr. John. R. Woltz.	

Swain	Dr. R. L. Davis.
Transylvania	Dr. M. M. King.
Tyrrell	
Union	Dr. J. E. Ashcraft.
Vance	Dr. Goode Cheatham.
Wake	Dr. J. J. L. McCullers
Warren	Dr. A. L. Pendleton.
Washington	Dr. W. H. Ward.
Watauga	Dr. E. F. Bingham.
Wayne	Dr. Williams Spicer.
Wilkes	Dr. J. M. Turner.
Wilson	Dr. W. S. Anderson.
Yadkin	Dr. S. L. Russell.
Yancey	Dr. W. M. Austin.

### LETTER OF TRANSMISSION.

NORTH CAROLINA BOARD OF HEALTH,

OFFICE OF THE SECRETARY,

RALEIGH, January 7, 1901.

His Excellency, Daniel L. Russell,
Governor of North Carolina.

SIR:—In accordance with Section 3, Chapter 214, Laws of 1893, I have the honor to present for transmission to the General Assembly this, the Eighth Biennial Report of the North Carolina Board of Health.

Very respectfully yours,

RICHARD H. LEWIS, M. D., Secretary and Treasurer.

### EIGHTH BIENNIAL REPORT

OF THE

# NORTH CAROLINA BOARD OF HEALTH, 1899-1900.

The biennial period just passed has been marked by greater progress on sanitary lines than any similar period since the establishment of the Board of Health. Our people have realized as never before the value and importance of preventive medicine. Two striking object-lessons, the widespread prevalence of small-pox throughout the State in sixty-six counties at one time or another since the first case on January 12, 1898, and the serious outbreak of typhoid fever in the fall of 1899 at the State Normal and Industrial College at Greensboro, among whose students nearly every county in the State had one or more representatives, brought home to the people in a most impressive manner the dangers that walk abroad with contagion and that lurk in impure drinking water. The interest in sanitation has become much more pronounced and much more extended in consequence of these visitations. In this light they have not been unmixed evils, as doubtless many more lives will be saved in the end by the better observance of sanitary laws in the future than were lost in the two epidemics.

Definite advance should be noted in the enactment by the General Assembly of 1899 of amendments to the medical license law, making the same probably the best in the whole country, and of an Act to Protect Water Supplies; and in the provision made by the State Agricultural Department for bacteriological examination of suspected drinking water, a most important work which was beyond the very limited resources of the Board of Health.

Inspections of all State institutions and of all public water supplies have been made.

The monthly Bulletin has appeared regularly during the two years, and as it goes to every physician, Health Officer, Mayor and Chairman of Boards of County Commissioners in the State, it constitutes a most valuable medium of communication between the Secretary or executive officer of the State Board and all those who are most nearly concerned in the local administration of the health laws. It has been of especial value, convenience and economy during the small-pox epidemic.

Reports in detail on the various subjects coming under the jurisdiction of the Board will be found below.

### MEETINGS OF THE BOARD.

# MINUTES OF THE CALLED MEETING AT RALEIGH.

Office of the Secretary, Raleigh, N. C., March 5, 1899.

Meeting called by the President to consider the small-pox situation in the State, as ascertained by the inspection just made in the eastern section by Drs. Thomas and O'Hagan, committee appointed by the President for the purpose. From their observations and from reports to the Secretary it was found that small-pox was present in Currituck, Pasquotank, Perquimans, Chowan, Tyrrell, Bertie, Edgecombe, Columbus, Alamance and Buncombe.

In view of the gravity of the situation, increased by the inefficiency of the management found in some places and the widespread opposition to vaccination found generally, it was decided, after full discussion, to ask the Governor to authorize the expenditure of a sufficient amount of the contingent fund conditionally appropriated in section 29 of the Act in Relation to the Board of Health for the employment of an inspector to visit all infected points, thoroughly inform himself as to the situation and advise the authorities as to the best management of the outbreak in every respect, impressing upon them and the community, as far as practicable, the value and importance of vaccination, said inspector to receive instructions from and report to the Secretary of the Board.

His Excellency was asked to grant the Board an interview at the Mansion, it being Sunday. The request was

granted, and at the appointed hour the members present, Drs. Thomas and O'Hagan, Colonel Shaffer and the Secretary (Drs. Battle, Harrell and Nicholson could not be notified in time, and Dr. Whitehead was sick) met the Governor. They were pleasantly received, their statement of the case listened to attentively and the desired authorization of the necessary expenditure, as above set forth, promptly given.

Re-assembling in the office of the Secretary, Dr. Henry W. Lewis, Superintendent of Health of Northampton, was unanimously elected "Small-pox Inspector," at a salary of \$150 a month and necessary expenses. The Secretary was instructed, in case Dr. Lewis should decline, to offer the place to Dr. Pendleton, Health Officer of Elizabeth City.

There being no further business, the Board adjourned.

RICHARD H. LEWIS,

Secretary.

# MINUTES OF THE ANNUAL MEETING AT ASHEVILLE.

BATTERY PARK HOTEL, May 31, 1899.

First meeting of the Board of 1899-1901. The members elected by the State Medical Society are Drs. George G. Thomas, S. Westray Battle, Henry W. Lewis and Henry H. Dodson; those appointed by the Governor, Drs. Charles J. O'Hagan, J. L. Nicholson, Albert Anderson, Richard H. Lewis and Colonel A. W. Shaffer, Sanitary Engineer. Of these there were present, Drs. Thomas, H. W. Lewis, Dodson, Anderson, Colonel Shaffer and the Secretary.

The organization of the new Board being the first business in order, Dr. H. W. Lewis nominated for President and Secretary respectively the present incumbents, Drs. Thomas and R. H. Lewis, and they were elected.

The minutes of the last meeting were read and approved. Dr. Henry F. Long offered his resignation as Small-pox

Inspector on the ground that his professional engagements for the immediate future would prevent his responding to every call. On motion, Dr. Long's resignation was not accepted, the understanding being that for the immediate future the demands upon him would be limited as far as practicable, and Dr. Joshua Tayloe was elected an inspector, the President being authorized at the same time to appoint another in his place, should he decline. On motion, the allowance of \$10 a day and necessary expenses while on duty was made.

Discussing the work of the Board for the coming year, it was decided to have made an inspection of all State institutions, including convict camps, by committees of the Board to be appointed by the President.

On motion, the Secretary was instructed to obtain from the Attorney-General of this State an opinion as to the powers of the Board in the matter of compelling Boards of County Commissioners to elect County Superintendents of Health.

Various matters pertaining to the public health were discussed, particularly the best methods of providing for the prevention of small-pox, which was regarded as being an indefinitely continuing menace to the State, especially from Virginia, where the disease is prevailing and the management thereof very lax.

Dr. Anderson brought before the Board the question of payment for four (4) bacteriological examinations of suspected drinking water sent by Dr. Duguid, of Dover, Craven county, who claimed that Dr. Duffy, Superintendent of Health, had authorized the analyses. Dr. Duffy stated that he had authorized chemical but not biological analyses. Dr. Anderson made a proposition to the Board to pay him half the amount due, or twenty dollars (\$20). On motion, the proposition was accepted, on the ground that the work was called for by such facts as would have justified having

the analyses made, with the understanding, however, that no payments for such work will be made in future unless a signed permit accompanies the sample of water.

It was decided to hold the usual annual health conference with the people on a day in the fall to be selected by the President and Secretary. On motion, Wilson was selected as the place.

On motion, the Board adjourned to meet again at the Conference.

RICHARD H. LEWIS, Secretary.

### CONJOINT SESSION

WITH THE

### STATE MEDICAL SOCIETY AT ASHEVILLE,

JUNE 1, 1899.

### PRESIDENT'S ADDRESS.

The President, Dr. George Gillet Thomas, sàid in opening the session of the Board of Health and the State Medical Society:

It is hardly necessary to say that this joint meeting brings with it the report, chiefly, of small-pox. The Secretary has other matters of great and grave importance besides, but to the rank and file, the serious question that has been presented to us has been the care of small-pox in the counties and in the communities. Most of you know that for a number of years the many States of the Union have been largely infected by small-pox. Our neighboring States have had a large number of cases, but for a long time we enjoyed a wonderful immunity. Gradually, however, the disease has crept in, and its presence and the mode of its introduction is largely a matter of history. It has come chiefly from Georgia, Alabama, South Carolina and Virginia. I regret to say that the very imperfect care exercised by our neighbor on the north has endangered the health and lives of a great many citizens in the eastern counties of North Carolina. It has brought to this Board a great deal of trouble and anxiety, and to the local health and hospital authorities expense as well as anxiety.

I beg leave, as a part of what I have to say this morning, to submit to you the report of a committee appointed by the State Board of Health to start the investigation of small-pox in North Carolina. This was addressed to the Board, and by permission of the Secretary I read it to you:

WILMINGTON, N. C., May 16, 1899.

To Dr. R. H. Lewis, Secretary N. C. Board of Health, Raleigh, N. C.

DEAR SIR:—The State Board of Health has for the past two years seriously considered the outbreaks of small-pox in North Carolina, and during the winter and spring of 1898 sought to aid the local authorities as far as possible in the management of the disease wherever it appeared.

The first case reported was in Wilmington, January, 1898. Immediately following this case the Charlotte authorities found one in their midst. In both of these cities the disease was limited to the original cases, or a few persons immediately exposed to the infection. In Charlotte the authorities deemed it wise to have an expert sent in by the Marine Hospital Service to finally determine the character of the disease, which was somewhat in dispute, and also to advise as to the best manage-

ment of the outbreak.

Shortly after this quite an epidemic of it appeared in Iredell county, and caused considerable alarm. Dr. C. P. Wertenbaker, M. H. S., at the request of local authorities, went to Statesville, and, as he had done in Charlotte, advised as to the best methods of isolating and controlling the disease. Under the wise management of Dr. H. F. Long, of Statesville, the malady at one time threatening the entire county of Iredell and the neighboring county of Rowan, was stamped ont, not, however, until sixty odd cases had been treated. After this it appeared in Montgomery and Randolph, and in both of these counties Dr. Long took charge of affairs and managed them as successfully as he had done in his own county, first and last treating over two hundred cases. After this there appeared one case in Wilson and several in Durham.

During the hot months the disease disappeared.

In October it was introduced into Edgecombe county, from Norfolk, Va., and in the course of several months in the whole county and a part of Nash about seventy-five cases were treated. In January a case developed in Northampton, and later seven or eight more, all of the original ones coming from Norfolk or its vicinity. Of the subsequent outbreaks, which are not spoken of in the report, the Secretary will give

you the full history.

The serious condition of affairs existing in Edgecombe county in January, 1899, induced the local authorities of that county to seek advice and aid of the State Board. The President of the Board met these authorities, and as the Board was in no manner provided with the means to assist materially the local authorities, and as the menace to all the Eastern counties was very marked, it was deemed wise that a committee be sent out to investigate the conditions that existed bordering on that portion of Virginia where small-pox was most prevalent, and to report to this Board such suggestions as appeared timely for its adoption in sending to aid the county officials in controlling the disease if it had appeared

or in preventing its approach.

In pursuance of this determination of the State Board, a committee of Doctors Thomas and O'Hagan visited the counties of Pasquotank, Perquimans, Chowan, Washington, Wilson and Wayne. In Elizabeth City we found the physicians thoroughly alive to the situation. In a conversawith these gentlemen, we were informed that the cases of small-pox in the town had been isolated and vaccination was progressing quite rapidly under an ordinance making it compulsory. As far as possible all exposed persons and those not protected by vaccination in the county were sought out and protection afforded them. Your committee was afforded an opportunity to meet and address quite a large party of citizens who had assembled in the court-house. They urged upon the people the necessity to uphold the action of the authorities in the matter of vaccination which was then in progress. The outbreak in the county was much more serious, but the physicians in charge assured us that further spread would Reports which have reached this Board since the return of be limited. the committee amply justify the prediction of these physicians.

It was most encouraging to see here, and generally throughout our visit made under the orders of your Board, how closely to the right line the physicians were coming, and how thoroughly they appreciated and

taught the value of vaccination. With very few exceptions, the physicians of the State have not sought to minimize the dangers of this dread disease or to allay the excitement, which was most salutary, except by promising to the citizens exemption from attack if they would submit to vaccination. As usual, these gentlemen of the profession have lowered the rates charged generally for vaccination, in order to assure to the gen-

eral public the great boon that follows this preventive measure

From Elizabeth City your committee went to the town of Hertford, and were received by the physicians most hospitably. At night we were greeted by a large portion of the citizens of the town and the neighboring country, including very many ladies. To this audience your committee appealed again for support of the local health authorities. We assured them that under the intelligent direction of the physicians of the good town and county ample protection would be afforded, if they would only see the necessity of earnestly asking for their advice, and being guided

In Edenton, the next point visited, the situation seemed to be, under the wise direction of the best physicians, taking a very satisfactory The cases of small-pox were in the country, six or eight miles from the town of Edenton, no case of it having appeared then or since in the town. At short notice a meeting was called in the historic courthouse of that honorable and ancient borough, and was attended by a

large body of citizens, representing all classes

It is well to remark here, that at this meeting we were much aided by the unsolicited statement of one of the County Commissioners, a thrifty, honest farmer. He said that it behooved all persons to seek quickly and successfully the prote tion of vaccination, that he knew the horrors of small-pox, having suffered from its fearful ravages in his own family. He told most feelingly how he was left alone to do the nursing and care for the sick in his household, all of his neighbors and friends, frightened by the loathsome disease, standing afar off, and leaving him outside the pale of human aid and that helpful sympathy which is generally accorded by one's neighbors in times of distress. We hope the appeal was not without effect. From Edenton, we visited Plymouth. The bad weather which set in shortly after our arrival, prevented us from seeing as many of the citizens as we had hoped to meet and address; however, we sought here, as elsewhere, to impress upon the people the lesson we had started out to inculcate. At this point a summons reached us from the Secretary of the Board to go at once to Goldsboro, examine and report to the Mayor upon certain suspicious cases that existed in that town, none of which had been reported as small-pox except one. We visited four houses. In the first was the reported case. This was varioloid, and was the one about which there had been most question among the medical men of the town. One case was so suspicious that we suggested the house be placed in quarantine and watched. There were two other cases of small-pox of very marked character. We did not seek for any further information, as it was evident from these that the town was infected. We subsequently met the Board of Aldermen, at which time there were in attendance a large body of citizens. Here again we most earnestly urged prompt protective measures, both of isolation of the diseased persons and vaccination of all citizens who were not already protected.

From this point it was the intention of your committee to visit the counties of Northampton, Gates, Camden and Currituck. One of your committee subsequently visited the county of Halifax, and advised as to the management of affairs in the outbreak in that county. On the day succeeding the visit to Wayne county your committee thought it best to go to Raleigh and have a consultation with the Secretary and Colonel Shaffer, as members of the Board, before proceeding further in this matter, it being the

opinion of your committee that the work which they had begun could only be efficiently done by an inspector who could devote his full time to At a meeting of the Board, held in the Secretary's office, it was unanimously resolved that the members present should visit his Excellency, Governor Russell, and lay before him the conditions as they appeared to the Board, explaining the situation in full, and asking him to provide for the employment of an inspector for a specified time. The report of the meeting of the Board and its visit to the Governor will appear in the Secretary's report of the meeting. It gives this committee pleasure to record the earnest interest of the Chief Executive of the state in the efforts of the State Board for the protection of the Common-wealth from a widespread invasion of the small-pox. A prompt response to our appeal for his aid was most encouraging, and bespoke a broadminded realization of the dangers that existed in, and the methods necessary to avoid them, as well as an appreciation of the necessity for the maintenance of some such supervisory sanitary body as the State Board of Health. There was no hesitation in his response to our requests, and the work of Dr. H. F. Long, the inspector appointed, as the result of this visit to the Governor, shows itself. It seems to us safe to say that no community which he has visited has failed to understand the preparedness of this position of inspector, which his previous experience had given him.

We cannot close this report without recording that the exigencies of business forbade your committee from completing the tour originally mapped out for them, but it has a pleasing recollection of the visits as far as made, and to have met and known personally many of the able men who make up the profession in Eastern North Carolina, and feels amply repaid for the inconveniences and loss of time. It is a matter worthy of record, and one of which we may be justly proud, that these gentlemen so thoroughly understood the situation and so intelligently advised for its control. The esprit de corps of this part of the State's medical men is remarkable, and justifies among other things the many encomiums of praise that have been awarded them from time to time by disinterested and distinguished visitors to our yearly meetings. It is hoped that the work of your committee, so ably taken up and completed by Dr. Long, will be productive of much good, and that the advent of another winter will find the State very largely protected from further outbreaks of small-pox by a constantly increasing number of successful

vaccinations.

By the experience of the past winter, and the intelligent work of Dr. Long, it is safe to hope that the Governor and his Council will come as generously to the relief of the State Board, should the cause arise demanding their aid and advice, in the coming months. But for the assistance derived from the Emergency Fund, as provided for by our Health Laws, the appointment of inspector would have been impossible, and while the members of the Board always responded to calls for their services, and for visits to infected points, the work was best done by one authorized person, who gave to it his full time, and happily for us the benefit of a large experience.

We have not, we fear, seen the last of small-pox, and another winter will most probably bring us new cases, but the Board feels justified in the assurance that if we are to deal with another series of outbreaks, methods for its control are now so well studied that the measures to be adopted under the guidance of the inspector will promptly stamp out the

disease wherever it appears.

Yours truly,
GEO. GILLETT THOMAS,
CHAS. J. O'HAGAN,
Committee.

This seems right now the most important consideration for the Board of Health. I do not know that the physicians in North Carolina can undertake a more important measure than to preach the propaganda of vaccination, and the appearance of the disease at present seems to foretell a rapidly increasing death rate. The epidemic is evidently gaining in virulence. Such was the experience in South Carolina. The Secretary of the Board of Health of that State told me in March that after two years, without any apparent cause, the death rate ran rapidly from 1½ or 2 per cent. up to 10 per cent. and upwards, varying according to locality. Next winter is going to bring us new cases, and a more virulent type of the disease. In Morganton in a recent outbreak the death rate has already reached 10 per cent., divided between negroes and whites about equally. It may be that the people will wake up to the fact that small-pox is a little worse than vaccination. Upon that point I wish to give expression to what appears to me a justified opinion. I believe that every physician who goes out among his clientele to preach vaccination, and who succeeds in convincing them of its necessity, ought also to impress upon them, absolutely, the care of the vaccinated arm. It is not bad virus. it is not anything ordinarily in the vaccinated person that is making these bad arms. It is the infection of the vaccinated point by a breach of the seal and the introduction of germs from without. I am so satisfied of this, that I would like to state to you a few facts which have convinced me. When small-pox broke out in Wilmington in 1898 I did a reasonably large number of vaccinations, covering all ages. I used at that time the virus from The National Vaccine Establishment in the District of Columbia and the Marietta Farm in Pennsylvania, indiscriminately, first one and then the other. In infants to whom tender care and special attention was given by both parents and nurses, I say this with guarded care, I know I did not have a single broken seal in the infants, all of whom went rapidly through the stages of typical vaccination, but among older children and adults such a favorable condition did not always obtain, as in many cases the vaccinated portion of the body was not protected, or a lack of care allowed a break in the seal, through which infection was induced, and the much-talked of sores said to result from bad virus, appeared. If you can by careful directions, which I do not deem it necessary to detail to this intelligent body, impress upon your patients both the reasons and methods of protecting the vaccinated points you will accomplish all that ought to result from this important measure and avoid the disagreeable ulcers that have so unfavorably prejudiced the laity against its adoption. As there can be no doubt of the necessity of vaccination, and as every doctor in the State is responsible to his patients for such timely advice as will protect them from the dire scourge of small-pox, it behooves you, one and all, to consider the best means of convincing those whose confidence in your skill has put the

health of themselves and their families under your care of the prime necessity of promptly erecting this sure and only barrier against the disease, the only sure protection known to the world against the disease—successful vaccination.

### ANNUAL REPORT OF THE SECRETARY OF THE NORTH CAROLINA BOARD OF HEALTH, 1898-'99.

RICHARD H. LEWIS, M. D., RALEIGH, N. C.

The Seventh Biennial Report of the Board to the General Assembly through the Governor, which gives a complete statement of its work for the two years ending December 31, 1898, includes that done between the time of our last meeting and that date. The report has been published, and as it will be sent to any one requesting it, it would be a work of supererogation to repeat it here. Suffice it to say that our principal work since we last met is included in: An official examination by Colonel A. W. Shaffer, the Engineer of the Board, of the water-sheds and works of the public water supplies of the State, including both chemical and bacteriological examinations of the same; an examination of the water supply of the State Hospital at Morganton, and of certain wells suspected of causing typhoid fever at Willardsville and at North Wilkesboro, infection with intestinal bacilli being found at both places; sanitary inspections of the State Hospital, a particular study being made of a small outbreak of typhoid fever there, the conclusion reached being that it was caused by an infection of a part of the milk supply; a sanitary inspection of the School for the Deaf and Dumb at Morganton, of the North Carolina College of Agriculture and the Mechanic Arts at Raleigh, and of the State Prison; an investigation, by request of the Superintendent of Health of Alamance county, of the conditions at Swepsonville, in the hope of ascertaining the cause of the very unusual outbreak there of malarial diseases; a health conference with the people of Winston-Salem.

### SMALL-POX.

Since the period covered by the Biennial Report, the work of the Board outside the regular routine work of the Secretary has been practically confined to work in relation to legislation and to the management in an advisory way of the epidemic of small-pox which has been prevailing throughout the State. Although a part of this has been covered by the Biennial Report, it would doubtless be more satisfactory to consider the matter as a whole and report the epidemic from the first case to May 1, 1899.

### SMALL-POX IN NORTH CAROLINA.

The first case occurred in Wilmington on January 12, 1898, in the person of a negro train hand on the Atlantic Coast Line, whose run was into South Carolina, in which State the disease was prevailing-warning of which was given in the Bulletin for December, 1897. Prior to May, 1898, it showed itself in Charlotte, 5 cases, 2 deaths, all colored, origin South Carolina; in Salisbury, 1 case, colored mail agent running between that point and Knoxville, origin Tennessee; in Buncombe, 2 cases, colored, origin South Carolina; Alamance, 2 cases, colored, origin Alabama; Clay, 10 cases, white, origin Georgia. Since May 1st the disease has occurred in all the counties named except Clay, and in 32 other counties, making in all 38 counties that have been visited by it, the infection in most outbreaks coming from Norfolk, Va., and vicinity. The official reports for the month of April show small-pox still present in the following counties: Anson; 2; Bertie, 1; Chatham,

2; Chowan, 15; Currituck, 1; Gates, several; Hertford, 2; Iredell, 1; Martin, 3; Mecklenburg, 2; Moore, 4; Nash, 7; Union, 8; Wake, 43—14 counties. While new outbreaks have been reported since May 1, 1899: 5, Catawba (Hickory), Edgecombe (Rocky Mount), Gates, Rockingham (Mayodan), Burke (Morganton); the last named is the only one which does not appear in the tabulated statement given below. There have been so far 14 cases in Morganton, with two deaths, among the whites. The reporter did not separate the races.

The total number of cases from the introduction of the disease into the State on January 12, 1898, to May 1, 1899, when the reports closed, was 616, with 17 deaths, or 2.76 per cent. Of this number 182 were whites, with eight deaths, 4.93 per cent., and 454 colored, with nine deaths, or 1.97 per cent. This death rate is somewhat larger than appears to have been the case in some other States whose records can be depended on—Ohio, for instance, where of 770 cases, only 7 died, or less than 1 per cent. Indeed our small-pox death rate has been quite respectable in view of the fact that many wiseacres have persisted in asserting that the disease was not small-pox but "chicken-pox," "Cuban itch," "elephant itch," etc. But still the mortality was very low, and that very fact increased the difficulty of managing the outbreaks, by rendering the people more indifferent to the importance of vaccination. Formerly when asked my opinion as to the best method of getting the people vaccinated, I would say: "A case of small-pox." Now I would say a number of cases, with several deaths.

In view of the rapid spread of the disease during the latter part of February it was thought advisable by the President of the Board to investigate the matter by a personal inspection of some of the infected districts on the part of a committee from the Board. This inspection of several of the Eastern counties was made by himself and Dr. O'Hagan, and the conditions were found to be such that he

called a meeting of the Board at Raleigh on March 5th to consider them. At this meeting the report of the committee was received and the situation fully discussed, the unanimous conclusion being that the time had arrived for calling upon the Governor for authority to expend a part of the Emergency Fund appropriated in section 29 of the Act in Relation to the Board of Health. In pursuance of this decision the members of the Board present waited upon his Excellency and laid the facts before him. He showed his intelligent appreciation of the situation by promptly giving the authority desired. Re-assembling, it was decided to employ a competent physician who should, under the title of Small-pox Inspector, visit infected points, decide doubtful diagnoses, interview local health officers, explain to the county and municipal authorities the gravity of the situation and the best way of meeting it, and impress upon the people the overwhelming importance of vaccination. Henry F. Long, of Statesville, Superintendent of Health of Iredell, in view of his intelligent management of a considerable outbreak of small-pox in his own county, was selected for the place. The results have shown the wisdom of the action of the Board and of their selection, as the unanimous testimony from the points he has visited has been that his presence and advice have been of great assistance. I am satisfied that the State never spent the same amount of money to better advantage than the \$395.75 spent in this cause from March 13th to May 1st.

Owing to the blessed fact that epidemics of infectious disease of any magnitude have been extremely rare in our State, our people are unaccustomed to the restraints and duties incident to the proper management of them according to the principles of modern hygiene, and this fact, combined with the mildness of the disease, engendering indifference to its dangers—such indifference in some instances at first, before the public were generally awakened to the

fact that genuine small-pox was among us, that the patient not feeling much sick would not call in a physicianincreased the difficulties of management. The exposures resulting from this were necessarily very numerous, and why so many unvaccinated persons escaped, as they unquestionably did, is a mystery. But strange as it may seem, the greatest trouble has come from our own profession. In some instances it arose from inexperience with the disease and the consequent failure to make promptly the correct diagnosis and report the case to the health officers. was perhaps in some instances excusable, although it must be said that a knowledge of the elementary principles of sanitary rules or a regard for them would have insured the taking of the proper precautions. This, however, was a small matter compared to obstructions to the proper control of the disease which arose in another way, caused probably by unfortunate factional disagreements in the profession in certain communities—very few I am glad to say. refer to the denial of the correctness of the diagnosis of small-pox by some physicians, thereby furnishing a centre for the intractable members of the community to rally around, and rendering the enforcement of the necessary regulations very much more difficult. Where the dissenting physician saw the case or cases in person it was doubtless an honest difference of opinion, but usually he refused to visit the patient, while he continued to publicly express his opinions. With the lights before me, I can see no sufficient justification for this attitude on the part of a medical man. In the matter of disease, the physician occupies with the people a position of authority, and as a patriotic citizen, to say nothing of his professional obligations, the abuse of that high position, from whatever motive, in a way calculated to increase the misfortunes of his neighbors, is, to express it in the mildest possible terms, extremely indiscrete. In every instance where the profession was united

no trouble was experienced, the authorities, both county and municipal, responding promptly to their suggestions.

In addition to directing the movements of the inspector, I have written a great many letters to superintendents of health, mayors, county commissioners, and others, and have prepared two circulars—the first in July, 1898, which was sent with a letter to the editors of the newspapers of the State for publication, and the second in March, 1899, which was printed in the form of a poster, a copy of which is attached, which was sent to the superintendents of health with a letter requesting them to post in conspicuous places.

On the whole, when we take into consideration the conditions already alluded to, and, in addition, the imperfections in our sanitary machinery, I think there is good ground for congratulating ourselves and the State that the various outbreaks have been generally so well managed and that so many of the people have been vaccinated. While there has been a good deal of opposition to vaccination, it is gratifying to know that several enterprising communities with officials of nerve carried it out under compulsion, going so far in more than one instance as to commit the recalcitrant to jail, or to work upon the roads, until a more enlightened frame of mind was reached. This is fortunate, for the seeds having been widely distributed, there is reason to fear a recrudescence of the disease next winter and probably in a severe form.

The following is a tabulated statement of small-pox in the State from January 12, 1898, to May 1, 1899, when the last official report was received:

### TABULATED STATEMENT.

# RECORD OF SMALL-POX IN NORTH CAROLINA FROM JANUARY 12, 1898, TO MAY 1, 1899.

. COUNTIES.	CASES.			DEATHS.		
	w.	c.	TOTAL.	w,	C.	TOTAL.
Alamance	20	2	22 "	1		1
Anson		5	5			
Beaufort		2	2			
Bertie		12	12		1	1
Buncombe	1	11	11		1	1
Catawba		13	13			
Chatham	1	18	19			
Chowan		21	21		1	1
Clay	10		10			
Columbus	2	2	4			
Craven		$^2$	2			
Currituck	10	30	40			
Durham		S	8	1		1
Edgecombe	43	13	56			
Gates	4	30	34			
Guilford	3		3			
Halifax		9	9			
Hertford	1	$^{2}$	3			
Iredell	16	57	73			
Johnston		1	1			
Lenoir	1	16	17	6		6
McDowell	1.4		14			
Martin		3	3			
Mecklenburg	1	7	8		3	3
Moore	~	6	6			
Nash		14	14			
New Hanover	3	3	6			
Northampton		9	9			
Pasquotank	14	3 <b>5</b>	49		1	1
Perquimans	1		1			
Rockingham		1	1			
Rowan	2	23	25			
Tyrrell	4		4			
Union		8	8			1
Wake	5	64	69		1	1
Warren	3	1	4		1	1
Wayne	3	$\frac{24}{2}$	27		1	1
Wilson	1	2	3			
Total No. cases in 38 counties Death rate per cent.	162	454	616	8 4.93	9 1.97	17 2.76

### LEGISLATION.

In the early part of the session of the recent Legislature I sent a circular letter to all superintendents of health asking for any suggestions they might have to make as to the amendment of our health law. Many did not reply at all and most of those who did had no amendment to suggest. Among those expressing an opinion, one or two favored an increase in the powers of the Board, for which public sentiment was not yet ready, but most confined themselves to the method of electing the county superintendent of health. They were about equally divided between retaining the present plan of election by the county commissioners and returning to the old plan of election by the county board of health. After very careful consideration of the matter, I finally settled upon a compromise method which, in short, constituted a new county board of health, to be composed of not more than three registered physicians, the county commissioners and the mayor of the county town, which board would elect the superintendent and fix his This was regarded by those with whom I discussed it as a good solution of the difficulty, but knowing from experience how dangerous a discussion of any technical bill was, with no one on the floor thoroughly understanding it, I decided, after advising with some judicious friends, that the gain to be obtained was not sufficient to justify the risk, and abandoned it. I did, however, after a good deal of tribulation, succeed in securing the enactment of "An Act to Protect Water Supplies," which is an advance on the line of sanitary progress in the State. This matter is fully set forth in an editorial prepared for the May BULLETIN, which is now in press.

But the most important legislation bearing on the public health for many years was the amendment of the medical license laws so as to require of all applicants for license a diploma from a medical college in good standing, requiring an attendance of not less than three years and furnishing such facilities for clinical instructions as should meet the approval of the Board of Medical Examiners. necessary to say that nothing is so important to the preservation of the public health in a community as the thorough and practical education of its physicians. Acting formerly in another capacity, as chairman of the Committee on Legislation of the State Medical Society, I had the honor of assisting in securing the enactment of the amendments. As the medical license laws, as amended, were printed in full in the April number of the Bulletin, it is unnecessary to discuss this matter further, other than to congratulate the Board and the Society on now having the best medical license-law in the country.

The annual health conference was held in Winston-Salem on December 7, 1898. I thoroughly advertised it through the local newspapers, which were very kind in doing it, and by means of a circular-letter giving the programme, distributed in advance, but the attendance for a town of that size was a disappointment to us—caused in part, let us hope, by the uncomfortable climatic conditions prevailing at the time.

As per appointment, I attended the National Conference of State and Provincial Boards of Health of North America for 1898 at Detroit in August last, and that for 1899 at Richmond the 23d and 24th of this month. These meetings, composed entirely of practical health officers and members of boards of health, have been of value to your Secretary in reviving his interest, stimulating his zeal and in broadening his views. They afford an excellent opportunity in private conversations and in public discussions to compare the work and methods of the different boards, and in conclusion I wish to say, as the result of such a com-

parison, that, especially in view of the tremendous inertia on the part of the people—and largely of the profession, too, I regret to admit—and considering our meagre appropriation, we have no reason to be ashamed of our work—unsatisfactory as it is. But the people have been awakened, as never before in my experience, by the small-pox epidemic, and I hope that it is the beginning of better things.

# MINIATURE OF POSTER SENT TO THE SUPERINTENDENTS

OF HEALTH.

# MOTICE!

#### PREVENTION OF SMALL-POX.

Small-pox is one of the most contagious and one of the most loathsome of all diseases

It is now widely scattered over the United States and is prevailing at twenty points in our own State to-day. There is a danger of our own State to-day. There is a danger of a widespread epidemic among our people.

Under these circumstances every eruption appearing after two or three days of head-ache, backache and fever, or even after merely a general bad feeling, especially if most prominent on the face and hands, should be regarded as small-pox, and the proper precautions taken promptly and continued until the patient is seen by a reliable

physician.

Be not deceived by false prophets who seek popularity by prophesying smooth things and call it chicken pox. According to one of the highest authorities, with a very few exceptions, chicken-pox is confined exclus-sively to childhood up to the age of twelve, and is rare after ten. So if the patient is past childhood it is almost surely small-pox, although it may be a mild attack. But mild cases can cause the severest form in the unvaccinated.

Fortunately, thanks to the genius and courage of the immortal country doctor, Edward Jenner, we have almost sure protection against the disease within reach of all in vaccination. If properly done it is practically as certain a preventive as a previous attack of small pox itself. In Germany, with its fifty millions of people, in 1871, before vaccination was made compulsory, the number of deaths from small pox was 143,000, while in 1897, under compulsory

was 143,000, while in 1937, titude computatory vaccination, it was only 116.

When small-pox is present in a community those who have been vaccinated before should be vaccinated again, as its virtues disappear more or less with time.

disappear more or less with time.

There seems to be a prejudice against vaccination on the part of some. This prejudice is due to ignorance of the facts. The effects of vaccination are really serious so seldom that they need not be taken into account. With the improved virus from the cow there is not the slightest danger of transmitting such human diseases as consumption scrofula or symbilis. sumption, scrofula or syphilis.

Having this sure preventive right at hand, a panic on the subject of small pox is utterly inexcusable. Those who are vaccinated—but only those—can laugh at small-pox and go on with their usual business in confidence.

Whenever small pox appears in a community it is all-important that the sick person should be separated from the well as soon as possible. No one should visit him, and only his physician and nurse should see him.

In fact, when small-pox is prevailing visits of mere sympathy or curiosity should not be paid to any case of sickness until its nature has been declared by the attending physician.

All persons who have been exposed to small pox should be vaccinated immediately and detained or quarantined in comfortable quarters for fifteen days from the time of exposure—until the danger of their having it has passed. Before leaving the house of detention they should take a thorough bath with warm water and soap and immediately after that another with some suitable disinfectant, and put on clean clothes from the skin out. The clothes in which they were exposed should be boiled or otherwise disinfected before being worn again, or removed from the house. The poison of small pox can be carried in the clothes for an indefinite time.

Upon the occurrence of small-pox in a community the people should interest them-selves in seeing that the regulations to preserves in seeing that the regulations to pre-vent its spead are obeyed, for the sake of the business of the town as well as their own personal safety. This applies with special force to the operatives in factories and mills, for the reason that the shutting down of a mill is such a serious matter to them. Employment elsewhere cannot be expected, because no mill would receive hands from another mill among whose people the disease existed. Operatives at work are less liable to contract the disease than if idle and engaged in social visiting.

After the death or recovery of a person who has had small-pox everything that has been in contact with him should be burned or disinfected in the most thorough manner

by the health officer.

Under the law (chapter 214, Laws of 1893) vaccination, quarantine, etc., are under the control of the County Superintendent of Health, or the medical health officer of a city or town, where there is one

Ample powers are conferred by sections 23 and 25 upon the Boards of County Commissioners and the authorities of cities and missioners and the authorities of cities and towns to enforce the necessary rules, the language of one of the sections being that they are authorized to make such regulations, pay such fees and salaries and impose such penalties as in their judgment may be necessary for the protection of the public health.

The reason for such laws is that the State does not permit individual citizens, for a mere whim or prejudice, to endanger the health and lives and business of their more reasonable neighbors.

Let everybody be vaccinated promptly.

RICHARD H. LEWIS, M. D., Secretary State Board of Health.

#### REPORT OF THE STATE SMALL-POX INSPECTOR.

Dr. H. F. Long, State Small-pox Inspector, made the following report:

Before making my report I would like to say a few words about smallpox which is not included in the report. The great difficulty we have had in controlling the outbreak of small-pox in this State has been due to the mild form in which the disease existed. It came here, as best I can learn, from Mexico. It was brought by a railroad contractor who gathered a lot of negroes from Birmingham, Ala., and carried them to Mexico three years ago to work on a railroad. Every negro contracted small-pox as soon as he reached there, and as soon as he was well, without being disinfected and without change of clothing, he made his way back. There they came in contact with other negroes, and had what they termed "Mexican bump," and the disease existed among the negroes a long while before it spread to the white people. I have found that all over the State, wherever I have been, small-pox exists in the very mildest form, and I also find that you cannot find any of the old negro slaves who have not been vaccinated; the younger generation of negroes we have are not vaccinated, but they are direct descendants of people who have been vaccinated for generations. In McDowell county last winter I witnessed an outbreak. There were fifteen cases, and every case was confluent and every case was malignant, and the mortality rate was 50 per cent. So far as I can gather, no man in that community had ever been vaccinated. In Iredell we had seventy-five cases, and there were only twelve cases that anything like approached to the confluent form, and those who had it were very old negroes who had been vaccinated when they were children. We had no death at all in Iredell county, and almost all the cases were the very mildest form. At Morganton I inspected a family named Houston, and I think three died, and every case in the family has been confluent. One case was hemorrhagic, the best I can find. Houston's family had not been vaccinated, and Mrs. Houston told me that neither her father nor her husband had ever been vaccinated, and they had a mortality rate approaching the old mortality, before vaccination was discovered. A few hundred yards away I also inspected some cases among negroes who had been vaccinated, and it showed in the mildest form. So the further away from vaccination we are, the nearer approach we have to the confluent and malignant form. The nearer to vaccination we get, the nearer approach we have to varioloid. If small-pox strikes a neghborhood where people have been vaccinated for generations, the form will be mild. If it strikes a neighborhood where the people have not practiced vaccination, the form will be

confluent and malignant, so the degree will depend altogether on locality—on how well the community is and has been permeated by vaccination. The report I have is short, and is simply the places I visited, and the number of cases I found:

STATESVILLE, N. C., May 28, 1899.

To Dr. R. H. Lewis, Secretary State Board of Health.

SIR:—I wish to submit to the State Board of Health the following report

of the work done by me as Small-pox Inspector of the Board:

My first inspection was made at Greensboro, March 11, 1899, where I found a suspect, by name Fentress, who had been following the occupation of beer-bottler at Newport News, Va. He was taken ill February 27th, and was seen by Dr. Ledbetter on March 10th and by me on the 11th. Diagnosis, small-pox.

March 15th, at Warrenton; suspect, Mr. James Tarwater, white, aged 33 years; diagnosis by attending physician, Dr. T. J. Macon, small-pox.

Well managed by physician in charge.

Burlington, N. C., March 16th. Inspection showed 19 cases of small-

pox. No measures whatever had been taken to stamp out disease.

March 22, at Carthage, discovered one case, well quarantined, well managed; case came from Norfolk, Va. Attending physician, Dr. McLeod.

March 24th, inspected at Goldsboro. Found 15 cases of small-pox, 2 cases of chicken-pox, the latter in children. Attending physicians, Dr. Powell and Dr. Cobb.

At Kinston, March 25th, I found 8 cases of small-pox; 5 about recovered; all quarantined at their homes. The authorities took more active

steps at once.

At Whiteville, March 26th; no cases then; history of one case which had recovered; at Brinkley, two cases had recovered. Attending physician, Dr. Harrell, had managed cases well.

Mt. Olive, March 29th; no inspection; history of case which had occurred 8 miles from town; had recovered and was gone. Had been treated by Dr. Aaron, who confessed he did not know what was the nature of disease.

At Fremont, March 29th; found two cases of small-pox in family named Barnes. These patients were sisters of a telegraph operator who had been treated for what was called chicken-pox. Attending physician, Dr. Lewis, who made diagnosis of chicken-pox.

At Wilson, March 29th; no inspection; history of two cases which had

been well managed and dismissed by Dr. Moore.

Rocky Mount, March 30th; inspected 8 cases of small-pox in period of desiccation. Ordered disinfected and released. Dr. Wimberly in charge. At Tarboro, 30th; no inspection; history of number of cases in county which had been well managed and discharged.

April 2d, Newton; found 2 cases in negro family. Attending physician,

Dr. Moser. No action had been taken.

April 11th, at Pee Dee; found one case recovered; had come from Raleigh. Diagnosis by Dr. Kerr, syphilis.

April 12th, Northampton State farm, Halifax; one case, pustular syphilide, brought out by vaccination. Attending physician, Dr. Ferguson.

April 13th, at Washington; found 2 cases of small-pox in pest-house; were well managed by Dr. J. Taylor.

April 15; inspection at Monroe discovered 2 cases in pest-house. All well managed. Dr. Ashcraft.

Pittsboro, April 16th; found 4 cases in the country. Well managed by Dr. Chapin.

Charlotte, April 18th, found one case, a drummer named Sossamon. Well taken care of by Dr. Strong.

April 22d, at Greensboro; inspection of three cases in pest-house; found them suffering from pustular syphilide, induced by vaccination.

Dr. Ledbetter in charge.

At Morganton, May 18th; inspected six cases; history of two deaths from small-pox; attending physician reported 15 cases in all. Dr. Lax-

At Hickory, May 23d; one case of small-pox; came from Morganton.

Dr. Abernethy in charge.

Small-pox has occurred in this epidemic in all its forms, from mildest varioloid to most malignant confluent type, and one case of hemorrhagic small-pox, which died at Morganton. All cases of malignant small-pox that I saw occurred in those who had never been vaccinated and whose parents and forefathers had never been vaccinated. Every case of discrete, or even coherent small-pox, occurred in those whose parents had been vaccinated. In every instance the infection came from Virginia or South Carolina. In every town where I made inspection I reported to the mayor, board of aldermen and representative citizens, gave them my technique for handling and taking care of the disease, and urged compulsory vaccination.

Respectfully submitted,

HENRY F. LONG.

# MINUTES OF THE MEETING AT THE HEALTH CONFERENCE.

Wilson, N. C., November 1, 1899.

Meeting of the Board at the Annual Health Conference with the people. Present, Drs. Thomas, Nicholson, Dodson, H. W. Lewis, Anderson, R. H. Lewis and Col. Shaffer. Dr. W. T. Pate, one of the bacteriologists of the Board, also present by invitation.

On motion, the Secretary was instructed to write to allcounty commissioners individually, urging upon those of the counties having no superintendents of health the immediate election of one, and upon all the great importance of making preparations for outbreaks of small-pox, at the same time recommending glycerinized vaccine points.

On motion, the Secretary was also instructed to write the judge holding the nearest court in the counties having no superintendents of health, quoting to him the opinion of the Attorney-General, calling attention to the anticipated

dangers from small-pox during the coming winter, and asking him to charge the grand jury to indict the board of commissioners if they refuse to elect a superintendent after their attention has been called to it.

On motion, the Secretary was likewise instructed to publish in the Bulletin the names of such water companies as fail to comply with the requirements of the act to protect water supplies, with comments; if they persist in refusal to comply, to send marked copies of said Bulletin to a number of leading citizens of the town; and if they still fail of their duty in this matter, to have the water analyzed by one of the bacteriologists of the Board and publish the analysis.

On motion, the bacteriologists of the Board were requested to furnish for the use of the Board a standard blank form of the bacteriological examination of drinking water desired.

On motion, the State Veterinarian was invited to unite with the Board in its meetings.

On motion, the President appointed a committee to prepare and transmit to our fellow-member, Dr. S. Westray Battle, resolutions of sympathy in the great affliction that had befallen him in the recent loss of his wife.

On motion, there being no further business, the Board adjourned.

RICHARD H. LEWIS,

Secretary.

# MINUTES OF THE ANNUAL MEETING AT TARBORO, MAY 22, 1900.

Tarboro, N. C., May 22, 1900.

Annual meeting of the Board. Present, Drs. Thomas, Battle, Dodson, H. W. Lewis, Nicholson, Anderson, Colonel Shaffer and the Secretary.

The minutes of the last meeting were read and approved. On motion, it was ordered that the inspection of the public institutions of the State be completed.

On motion, the Engineer of the Board was directed to make the usual biennial inspection of the public water supplies of the State.

The Secretary called the attention of the Board to the fact that the State Board of Agriculture had equipped a biological laboratory, and proposed to employ a bacteriologist for the work of their department, and suggested that a formal request be made of them to make for us bacteriological analyses of suspected drinking waters as they have made chemical analyses for many years. The matter was discussed and the following preamble and resolutions were adopted:

WHEREAS, typhoid fever, with the exception of tuberculosis, is the most fatal to our people of all the preventable diseases, the number of deaths in the State from that cause alone annually being more than 1,000, and the number of cases that recover probably ten times as many; and

Whereas, this disease is nearly always conveyed by infected drinking water, which infection can only be ascertained by a bacteriological examination; and

WHEREAS, the appropriation made by the State for the work of the Board of Health is entirely inadequate to provide for more than a very few such examinations of the public water supplies during each biennial period; and

WHEREAS, we have been informed that the Board of Agriculture proposes to establish a laboratory with an expert in charge for the prosecution of its work in relation to pure food and the diseases of animals; therefore,

Resolved, that the said Board of Agriculture be respectfully requested, for the good of the people of the State, slightly and inexpensively, to extend the scope of its laboratory so as to include investigations into the purity of suspected drinking waters, especially of wells and springs in the country districts, said investigations to be made upon the request of the Secretary of the Board of Health, under such regulations and restrictions as the Board of Agriculture may prescribe.

Resolved, that if the Board of Agriculture consider this request favorably the Secretary and the Engineer of the Board of Health confer with the officials or committee having the matter in charge, upon request, and arrange with them the details of the work.

Views as to the best practical management of the small-pox and vaccination problem were interchanged.

On motion, the Board adjourned to meet with the State Medical Society in conjoint session to-morrow.

RICHARD H. LEWIS, Secretary.

# CONJOINT SESSION

WITH THE

# STATE MEDICAL SOCIETY AT TARBORO.

MAY 23, 1900.

Dr. Chas. J. O'Hagan presided in the unavoidable absence of President Thomas.

Dr. O'Hagan opened the conjoint session in the following address:

I have had honors thrust on me to-day in being called upon to preside over the conjoined meeting of the Board of Health and the State Medical Society. Honors of this kind sit very awkwardly on me, and if I do not wear them gracefully I hope I may wear them not disagreeably. The majority of you gentlemen can hardly recollect when the Board of Health of North Carolina was first formed. The Legislature of this State made a most munificent appropriation to this body of \$200 per annum, which was not quite enough to furnish stationery and stamps. It was then in the hands of one of the best men belonging to the profession, Dr. Thomas F. Wood, and with this scanty amount with enthusiasm and zeal he continued to work and kept the thing alive until the beginning of another meeting of the Board, to whose unremitting labors is largely due the position in which it now stands.

By iterating and reiterating the importance of this work to the State, the State has been induced to make a larger, but still infinitely smaller than it ought to be, appropriation for carrying on this work, and the work it has done has been of immense value.

It had to begin at the beginning. It had to teach the laity throughout the country the immense value of pure water. For the first time attention was called to the fact that dirty water was one of the most fruitful sources of disease. They had to be called upon to explain the value of pure water and air, and yet the people had been breathing the one and drinking the other all their lives, and were ignorant that these primary elements were most fertile sources of diseases that sometimes decimated the whole country. Again this Board of Health has called the attention of the people to the arrest of epidemics and dangerous diseases. Like a sentinel on a watch-tower it has called the attention of the people of the

State to the recognized methods of prevention, and has induced them to take advantage of this, and in that way has done immense good, but still the province of the Board of Health is not limited to teaching people how they shall live, for there are other things as important. It has a wider scope, a longer range, and with your permission, gentlemen, I beg leave to call the attention of this body to certain views I entertain, hoping to convey through them to the laity some idea of their importance. While the world, in many respects, is very much better than it formerly was, in other respects it is no better. Seventy-five years ago the Lord Chancellor of England announced that the school-master was abroad in the land, and he has been traveling over the land and illiteracy is disappearing, but while illiteracy disappears, I fear that it is not followed by any corresponding improvement in the moral advancement of the world.

The clergy will tell you every Sunday from the pulpit that the world is getting worse, and while I do not agree with that broad statement, I fear, notwithstanding their labors for two thousand years, the world has not profited by them quite as much as it ought to have done. The great mistake that a medical man will point out for the vast amount of labor which has been wasted is the fact that he does not recognize the close relation which exists between the physical and psychological portions of man. The physical basis of life involves and contains every function, whether mental or physical, pertaining to the human being. We have been under the erroneous impression that the mental functions, the mental phenomena, were separate and distinct from the physical functions. The mental and physical are intimately related, and if you wish to improve one you must improve the other. This, then, is the reason why such a vast amount of labor has been wasted, thinking that we can cultivate the moral and intellectual without taking care of the physical. We have improved the physical, but I fear the moral has not been improved in corresponding relation. We have forgotten the effect of heredity. It has been well known for centuries among the people that like produces like—like father, like son. The belief has been firmly grounded in them for centuries and centuries, but no value was attached to it, no practical value was derived from it because no pains were taken to cultivate a race from which criminal and moral heredity should be eliminated. We all know we can improve the breed of cattle, whether food animals or work animals; by careful selection we have produced some of the noblest animals of the world. The Kentucky racer from the blue-grass of Kentucky was bred from the common banker pony. We look on truly indifferent to the fact that incompetent people hastily rush into the matrimonial relation and thereby propagate a crop of descendants equally incompetent and degenerated. We see also the criminal classes are allowed to meet and reproduce their kind. We find that constitutional diseases, such as insanity, epilepsy (which could hardly be called a constitutional disease), syphilis, and all those other things which descend from father to son, are allowed to go unchecked. And what is the result? To protect society from the incompetent and vicious and criminal classes the whole land is dotted with jails and prisons, enormous sums of money are expended annually to protect us from the criminal classes, and charitable institutions, like insane asylums, are more or less evidenced in this and other States to extend the hand of charity to these unfortunates. Year by year these expenses are increased, and year by year the criminals and incompetents, and others of a similar class, are increasing at a rapid ratio. Is there not a remedy for all this? Shall we allow the criminals and incompetents to increase pari passu with us, and year by year protect ourselves from the assaults of these classes? Is there no remedy? I think there is.

Among recent years the study of anthropology has been added as it were an annex to the medical profession, and we have taken the position of Alexander Pope that the proper study of mankind is man, but scientific study, and that will in no distant time provide a remedy, or at least a partial remedy. Assaults on personal property are not decreasing, and all the agents which have heretofore been called in to prevent them have each and all been signal failures. What shall we do to be saved? It seems to me that the school-master who is teaching to read and write, and the minister who is endeavoring to awaken in them a sense of their duty to themselves and to their Creator, have each failed because they have not come to the practical application of the knowledge they have. Legislation will not, I think, in the immediate future, and hardly, I fear, in the remote future, be called upon to provide a means. It does seem to me, gentlemen, that the marriage relation which is assumed so recklessly and thoughtlessly should be strictly subjected to State supervision. and no man or woman could get a marriage license who could not show a clean bill of health, that of the families on either side there was no constitutional disease, insanity, syphilis. They should bring a clean bill of health before the marriage license is issued to them.

Again, cripples, hunchbacks, and those unfortunates whose physical system is crippled and incapacitated for self-support, should be subjected to a rigid personal inspection, and unless they could furnish ample authority as it were, or information that they were capable of protecting themselves, and raising families without throwing an additional burden on the State, the right to propagate their species should be denied. It will be asked, how are you going to protect yourselves? That has not been answered yet, and I do not think will be at any time in a reasonable expectation of the future, but there is no doubt in my mind that if parents and guardians were called upon to subject a man or woman who proposed to enter their family to a rigid examination of family history, that a vast deal of misfortune could be avoided. The criminal classes must be dealt with in a similar manner. You, gentlemen, have

heard something of the history of the Juke family, where one vagrant woman furnished a progency of two hundred and odd criminals, and cost the State of New York upwards of \$7,000,000. Have such people the right to live? It seems to me that the safety of the public demands, if they are not exterminated, they should be at least kept under detention, and such portions of their organism as would perpetuate the breed should be removed. It was in 1867 that Andrew Johnston, the President of the United States, at a meeting in Knoxville, Tennessee, by men who had charge of the criminal institutions of the country, boldly proclaimed that all the criminals should be castrated, the women spayed, and held in some penitentiary, and in that way prevent the propagation of that class.

Again, young people under the influence of passion rush into the matrimonial connection, and the result is that thousands and tens of thousands of helpless creatures are thrown a burden upon society, and those who see these things in the large cities become hopeless in despair of the future. I took up a newspaper yesterday and in it saw a poem written by some good and generous and humane lady that struck me with some force, and I could not help sympathizing with her:

ON READING DANTE'S "INFERNO."

I too have been through hell, O Florentine;
Seest thou not by my visage it is so?
Bears it not still the impress of the woe,
The sin, the suffering, that mine eyes have seen?
Could any walk with countenance serene,
That once the anguish of such sight did know—
That through such paths in retrospect might go?
Canst thou not read it in my altered mein?

The voice of humankind throughout the years Robs feast and dance and carnival of mirth, And blurs for me the sunshine of the day, I catch in laughter the sad sound of tears. So that of me, as once of thee on earth, "Lo, who hath been in hell," the people say.

This is an abject conception of the horrible sights of misery and woe and vice and crime that come under the inspection of people whose business it is to see those things. We, the medical men of the country, the plain country doctors, visit always and see all manner of sights of woe and sin and misery. Time and again do I think, will there ever be an end of this, when sin and sorrow will be banished from the earth? That it will come sooner or later, I firmly believe, but it will not come until the same care is exercised in the breeding of the race that there is in domestic animals, and when this is done and we can step from the heights of transcendentalism and apply the same laws of heredity that we apply to animals, I think if the millenium does not come, we will have a much better world than it is now.

# ANNUAL REPORT OF THE SECRETARY OF THE NORTH CAROLINA BOARD OF HEALTH, 1899-1900.

RICHARD H. LEWIS, M. D., RALEIGH, N. C.

The work of the Board, since my last report, in addition to the regular routine of the Secretary's office, made up chiefly of advice on sanitary subjects to individuals, municipalities, corporations and health officers in person, by letter, and by telegram, and the preparation of matter for the monthly Bulletin, has consisted in inspections of some of the State institutions, the holding of the annual health conference with the people, and the effort to direct, as far as our powers permitted, the management of the epidemic of small-pox, which I regret to say has prevailed quite extensively throughout the State during the past year.

## INSPECTION OF STATE INSTITUTIONS.

Inspections by committees from the Board, appointed by the President, have been made of the three Hospitals for the Insane, the University, the Normal and Industrial College, the two Agricultural and Mechanical Colleges, the School for the Deaf and Dumb at Morgauton, and, at the special request of his Excellency, the Governor, of the abandoned convict camp at Castle Hayne, with a view to its healthfulness for that purpose. With the exception of the State Normal and Industrial College at Greensboro, we found all the institutions in a good sanitary condition, although a more abundant water supply is needed at the University.

Learning that the Board of Trustees of the Normal and Industrial College would meet before the report of the regular Committee of Inspection could reach them, I felt it my duty to make a personal visit to that institution and supplement the investigation already made, so that I might

be in a position to advise directly with the Board. I was invited to appear before the Board and make to them a verbal report of my investigations, and to give them my views as to the situation. Having done this, I was requested to prepare a full and candid report, suppressing nothing, and give it to the leading newspapers of the State. was promptly done, and sent to all the morning dailies in the State. It was also printed in the Bulletin, and as every physician whose address is known receives regularly a copy of that publication, you have already read it, or have had an opportunity to do so, at any rate, and it would therefore be superfluous to repeat it here. After this report was given to the newspapers, I made two other visits to the Normal and Industrial College, and learned certain additional facts which confirmed the view first expressed, that the cause of the outbreak of typhoid was the water of the central well which was drunk by all the students taking their meals in the college, to whom the sickness was limited, and which was found by two bacteriologists, Drs. Albert Anderson, of Wilson, and A. C. Abbott, of Philadelphia, to be infected with intestinal bacilli. facts were set forth in a supplementary report, which was printed, together with the original report, in the Bulletin for December, 1899. The medical report of the fever by Dr. W. P. Beall, of Greensboro, the chief consultant, was given to the profession through the columns of the Carolina Medical Journal, and was reprinted in the Bulletin for February.

In round numbers, one-third of the total college population had fever, and there were fourteen deaths. As every county in the State had a representative in the student body, and most of them one among the sick, the deep solicitude and widespread interest felt throughout the State, not only in that particular outbreak, but in the subject of typhoid fever in general, its causation and its prevention, can be

easily understood. Realizing this, I availed myself of the opportunity to "point a moral" at the conclusion of the report referred to in the following words:

"Every city and town should have an expert inspector of plumbing, and require inspection by him of every job before it is covered up and accepted, and all public institutions and other establishments with plumbing should require a similar inspection. Wells near sewers, or any accumulation of filth, especially of human origin, are dangerous. Guard with jealous care the purity of your drinking water."

Whether any of our cities and towns have acted upon the suggestion as to the employment of an expert inspector of plumbing, and the requirement that all plumbing work should be inspected and approved by him before being accepted, I have not been informed, but the suggestion as to drinking water did bear some fruit. The University and the Agricultural and Mechanical College for whites, of the State schools, and St. Mary's, at Raleigh, and the Horner Military School, at Oxford, of the private educational institutions, had bacteriological examinations made of their water supplies, thereby exhibited a progressive and enlightened spirit that is worthy of commendation, and setting an example that it would be wise for the others to follow.

While the outbreak of typhoid fever at the Normal and Industrial College is greatly to be deplored, its educational effect upon the people has been great, and the final result in the coming years will no doubt be the saving of many more lives than were lost. The history of sanitary science shows that no material advance in its practical application has ever been made, except as a consequence of some tragedy of this sort.

# THE HEALTH CONFERENCE.

In the hope of interesting and instructing the people of some of our largest cities and towns in matters pertaining to the public health, meetings of the Board with the people for the purpose of discussing before and with them, in a practical and popular way, sanitary subjects, were inaugurated at Salisbury in 1893. Since that time similar meetings have been held in order at Washington, Charlotte, Goldsboro, Winston-Salem and Wilson. We have been assured that they were helpful in promoting the cause they were designed to serve, but it must be confessed that appreciation by the people of these efforts on the part of the Board has not increased, the first two having been the most successful. It is true that rival attractions of a more entertaining character have interfered on three occasions, and they may have been the explanation of the comparatively small attendance, although it has invariably been excellent in quality and respectable in numbers. It certainly cannot be attributed to a falling off in the quality of the work done by the members of the Board participating, as the papers and addresses were never better, if so good, as those presented at the last conference at Wilson, the announcement and programme of which was as follows:

# HEALTH CONFERENCE AT WILSON, NOVEMBER 1, 1899.

#### AIMS AND OBJECTS.

The Conference is intended to be between the members of the State Board of Health and the people. Its object is to interest the people in sanitary matters by explaining and impressing upon them the great importance to the individual and to the community of a strict observance of the laws of health. Its proceedings will, therefore, be not technical but popular in character, and every one present will be invited to participate therein, by taking part in the discussions and by asking questions, which the members of the Board will take pleasure in answering to the best of their ability.

As the enforcement of sanitary rules in the family is largely in the hands of the mistress of the household, the ladies are especially invited to attend.

Papers or addresses are promised on the following subjects:

Old Age and How to Attain it—By Dr. J. L. Nicholson, Richlands, member of the Board.

Vaccination as an Economic Measure—By Dr. Henry H. Dodson, Milton, member of the Board.

Malaria and Mosquitoes—By Dr. Richard H. Lewis, Raleigh, Secretary of the Board.

A Discussion of the Health Laws now Operative and Reasons why they Should be Earnestly Supported by the Public—By Dr. George G. Thomas, Wilmington, President of the Board.

The North Carolina Health Law and the Local Health Officer—By Dr. Henry W. Lewis, Jackson, member of the Board.

Practical Hints on Drinking Water—By Dr. W. T. Pate, Gibson, one of the bacteriologists to the Board.

There will be a Question Box, and persons in the audience too modest to speak out in meeting can write them out and deposit them in the same for answer by some member of the Board. Opportunity will be given for this at the end of the discussion of each set subject.

The meetings will be held in the court-house at 10 A. M. and 7:30 P. M.

You are cordially invited to attend and bring your friends.

RICHARD H. LEWIS,

Secretary.

N. B.—The subjects will not necessarily come up in the order in which they appear above.

In view, however, of the sacrifice in time and labor required of the members of the Board, and the expense incident to the meetings, it is a question as to whether they should not be discontinued. An expression of opinion by members of the profession outside of the Board would be welcomed.

### COUNTY SUPERINTENDENTS OF HEALTH.

In planning the construction of our health laws, the County Superintendent of Health was made what might be called the corner-stone. While the State Board is, in a general way, in charge of all matters relating to the public health, it has only advisory powers, and the actual practical work must be done by the superintendent. word, a county without a superintendent has no sanitary organization, and the health laws cannot be applied to its people. In spite of every effort, until recently, a considerable number of counties have utterly ignored the law commanding them to elect a superintendent. For years the number of counties having superintendents was less than seventy, then by special effort it was raised to eighty odd. At the time of our last meeting there were eleven counties having no health officer. The Board, at a meeting held at the time of the Conference at Wilson, realizing their utter helplessness in case of the introduction of smallpox, which they anticipated would become widespread. instructed its Secretary to write to every county commissioner in the derelict counties individually, calling attention to these facts, and urging the importance of the immediate election of a superintendent. The Secretary was also instructed to write to the judge holding the nearest court in said counties, asking him to charge the grand jury on our health law, and to suggest the indictment of the commissioners refusing to perform their duty. At the same time a letter to every commissioner in the State, setting forth the importance of making preparations for the probable appearance of small-pox, was ordered. I wrote to one judge, but whether he acted upon our request or not, I have never learned. The letters were sent to the commissioners. and eight new superintendents were elected, so that now only three counties-all very small-Camden, Pamlico and

Tyrrell have no health officer. The value of this official is coming to be more and more appreciated every day, thanks chiefly to small-pox, and it is to be hoped that in time he will be adequately remunerated for his services. Some counties, I am glad to say, have shown a disposition to do this by paying the superintendent \$10 a day when engaged in small-pox work, although it must be admitted that many pay less and that many add nothing to the mere pittance.

# THE OUTSIDE INSANE.

While the insane constitute a class of their own under the special care of other guardians, they cannot be properly ignored in a general consideration of the public health. Although our State has made generous provisions for these unfortunates in three well-equipped and admirably managed hospitals, the present accommodations are not adequate for the care of all who need it. Basing an opinion upon the recent excellent report of the State Board of Public Charities on this subject, which gives the number of insane, epileptics and idiots located at 766, it is not unreasonable to assume that there are at least one thousand of these stricken ones in jails, county homes and private families. It would be a work of supererogation to detail to a body of medical men, who are only too familiar with such sad sights, the horrors of the situation of many of them. No matter how good the intentions of their keepers may be, they cannot obtain the care and attention to which, as a matter of simple humanity, they are entitled, owing to the lack of facilities and of knowledge and experience in this particular kind of work on the part of those in charge. By a comparatively inexpensive amplification of our three State hospitals, all of the insane and most of the epileptics could be given expert care and treatment at a cost, in the aggregate, very much less than that incurred under the present system. It is to be hoped that the next Legislature will take action in this matter, and as our law-makers are largely influenced by public opinion, it seems to me that the adoption of a resolution setting forth the views of this body, which represents the medical profession of the State, would be in order.

### PURE FOOD AND DRUG CONGRESS.

By appointment of the President, I attended, as a delegate from this Board, the third annual session of the National Pure Food and Drug Congress, which was held at Washington, March 7-9. The meeting was largely attended by representatives of all the interests involved from all parts of the United States. After a very full discussion of the relative merits of two bills setting forth the objects sought, which had been introduced in the House of Representatives by the Honorable Messrs. Brosius and Babcock, respectively, it was decided that the Brosius bill was the more satisfactory, and it was adopted as embodying the views and wishes of the Food Congress. look for desirable legislation on this line is said to be favorable, if action can be obtained at this session. I would, therefore, respectfully suggest that a resolution calling attention to the importance of the subject, and asking the support of the Brosius bill by our Senators and Representatives in Congress be adopted by the conjoint session and forwarded to them at once.

### SMALL-POX.

The history of small-pox in the State for the past twelve months has been an almost exact repetition of that of the preceding year, in every respect, excepting the number of cases, which has been nearly five times as great.

An exact comparative statement is as follows:

From January 12, 1898, to May 1, 1899—Number of cases (in 38 counties), white, 162; colored, 454; total, 616.

Number of deaths, white, 8; colored, 9; total, 17. Death rate, per cent., white, 4.93; colored, 1.97; total, 2.76. From May 1, 1899, to May 1, 1900—Number of cases (in 55 counties), white, 731; colored, 2,075; total, 2,806.

Number of deaths, white, 35; colored, 30; total, 65.

Death rate, per cent., white, 7.78; colored, 1.44; total, 2.31.

From this statement it appears that the proportion between the two races is almost exactly the same, the number of colored attacked being nearly three times as large as the number of white in both periods. The death rate has remained also nearly the same—a trifle less—the decrease being slightly more marked in the colored race.

The character of the disease has, as a rule, been very mild, and from that fact have arisen nearly all the difficulties in the management; the indifference, and often positive opposition, on the part of the people to vaccination; the reluctance of the authorities to institute and support effective measures of prevention, and the mistakes in diagnosis, including the disastrous effect upon public opinion of the efforts of some of the physicians making the mistakes to support their position. From the last of these three things has come the chief trouble. The matter has been so fully discussed in various issues of the Bulletin during the year that I will not weary your patience by a repetition of it, but will merely cite two instances, the counties of Guilford and Rockingham. In both of these counties the disease was diagnosed chicken-pox by the attending physician, and in the latter the position was persisted in, notwithstanding the opinion to the contrary of an expert. • In consequence, the proper precautions were not promptly taken, and the result was, in Guilford 509 cases with nine deaths, and in Rockingham 520 cases with 20 deaths, to which should be added the direct cost to the counties of thousands of dollars in handling the widespread epidemics, and the loss of tens of thousands in trade. In justice to

the superintendents of both these counties, it should be said that the harm in the way of numberless exposures of unvaccinated persons was done before the disease was reported to them as small-pox, when only their responsibilities began. I have no reason to believe otherwise than that they are both good men, and efficient health officers.

The work of our inspectors, Drs. Joshua Tayloe, of Washington, and L. Harrill, of Statesville, whose reports are attached, has been of great value in settling disputed diagnoses, instructing superintendents new at the business, impressing upon the authorities the gravity of the situation, and explaining the best way to meet it.

In response to special requests from Greensboro, Winston, High Point, for a United States expert, I asked Surgeon-General Wyman, of the Marine Hospital Service, to send one of his men to these points. He promptly granted my request, and sent Passed Assistant Surgeon Wertenbaker, whose efforts were of material aid in setting public opinion right, and in inaugurating the proper precautions.

Upon the occurrence of a case of suspected small-pox in one of the students, I personally visited the University, at the request of President Alderman and Dr. Whitehead. I confirmed the diagnosis of small-pox already made by Dr. Whitehead, indorsed the precautionary measures already planned and in part inaugurated, and addressed the studentbody, particularly upon the value and importance of vaccination. The entire absence of panic among the five hundred students, and the failure to spread from the first case under such circumstances, is sufficient testimony to the admirable management of those in charge there. personally visited Reidsville, at the urgent and repeated request of Superintendent Ellington, to aid him in securing the co-operation of the county commissioners with those of the town. I addressed both bodies in joint session, and was much gratified to learn that the county commissioners took action in the manner desired immediately upon adjournment, and to be assured since that my visit was really helpful.

Owing to the extreme mildness of the disease in many instances, no physician has been called in, and absolutely no precautions in the way of disinfection have been taken. This means, of course, a great many foci of infection for time to come. According to the reports of the superintendents, hardly more than ten per cent. of the people have been vaccinated on an average, though it should be said to the honor of this county of Edgecombe, whose hospitality we are now enjoying, that she heads the list in this good work with eighty per cent. of her entire population, rural as well as urban, vaccinated. The conclusion from these two facts is inevitable. There must be a recrudescence of small-pox next winter, unless the people are generally vaccinated between now and then on a much more extensive scale. Since the decision of the Supreme Court, in State Appellant vs. W. E. Hay, from Alamance, affirming the right of county and municipal authorities to enforce compulsory vaccination—a copy of which opinion, delivered by Justice Clark, was printed in the March Bulletinthere need be no trouble about it. The responsibility rests upon the said authorities. And in this connection, let me say one word as to the duty of the medical profession in the premises. It is clear. They should, without ceasing, teach, preach and practice vaccination, and cordially support all authorities trying to bring it about.

In conclusion, I would say that the Board of Health, owing to the small-pox epidemic and the outbreak of fever at the Normal and Industrial College, has never been so much in evidence, and, apparently, so much appreciated by the people as during the past year.

# RECORD OF SMALL-POX IN NORTH CAROLINA, FROM MAY 1, 1899, TO MAY 1, 1900.

COUNTIES.	CASES.			DEATHS.		
	w.	C.	TOTAL.	W.	C.	TOTAL.
Alamance	11	51	62			
Alexander	12		12			
Anson	12	18	30			
Bertie	3	16	19	2	1	3
Buncombe	27	6	33			
Burke	27	34	61	3		3
Cabarrus	10	3	13			
Caldwell	1	13	13 1			
Carteret	8	31	39	2		2
Caswell	0	1	1			. 4
Chatham	5	90	95		3	3
Cherokee	1	.,0	1			0
Chowan	3	30	33			
Cleveland	1	12	13			
Craven		1	1			
Cumberland		1	1 1			
	. 22	2	24			
Davidson	11	34	45		1	1
Davie	8	21	29		1	1
Durham	2	19	21			
Edgecombe		1	1			
Forsyth	8	4	12		1	1
Gaston		8	8			
Gates	18	100	118	. 1		1
Granville	1		1			
Guilford	64	445	509	2	7	9
Halifax	12	150	162			
Harnett	6	2	8			
Haywood	24	8	32			
Henderson		1	1			
Hertford	7	36	43		2	2
Iredell	$\frac{1}{15}$	24	1		1	
Johnston	2	48	39 50		1	1 1
Mecklenburg	16	76	92	1	î	2
Nash	22	24	46	$\frac{1}{2}$	1	3
New Hanover	1	15	16		•	"
Northampton	•	14	14		1	1
Orange	20	24	44		-	
Pender		8	8			
Person	26	14	40	1		1
Randolph	11	7	18			
Richmond		29	29		1	1
Robeson	15	15	30			
Rockingham	144	376	520	16	4	20
Rowan	40	130	170	3	4	7
Rutherford	1	60	61			
Stanly	1	23	24			
Surry	105	12	117	2		. 2
Union		8	8			
Vance	2	1	3			
Wake	5	26	31			
Warren		2	2			
Washington		1	1			
Total No aggod (in 55 aggretics)	791	2 075	2 906	25	30	65
Total No. cases (in 55 counties)	731	2,075	2,806	35 4.78	1.44	2.31
Death rate, per cent.		1	3	1.10	1 1.77	1 2.01

#### REPORT OF SMALL-POX INSPECTORS.

#### REPORT OF DR. TAYLOE.

DR. R. H. LEWIS,

Secretary State Board of Health, Raleigh, N. C.

SIR:—I submit herewith to the State Board of Health the following report of my work as Small-pox Inspector, from May, 1899, to May, 1900. In this report I give the towns, counties, number of cases examined, how managed and by whom. Also what precautions had been taken up to my inspection.

May, 1899—I made a trip to Gates county, this being my first inspection, examined a good many patients suffering from the mild forms of small-pox, two-thirds being white people. There existed in Gates county, at the time of my visit, thirty-five infected houses. No precautions had been taken. No superintendent of health.

May, 1899—I inspected the conditions in Currituck county. Six cases, two white and four colored, in charge of Dr. H. M. Shaw, Superintendent of Health. Some precautions had been taken.

June 23, 1899—Hertford county, at Ahoskie, I examined three cases, negroes, in charge of Dr. Tayloe, Superintendent of Health. They were well cared for.

Scotland Neck, Halifax county—Five cases were examined by me, all negroes. More negroes afterwards developed the disease, also some whites. No precautions had been taken until the time of my inspection, as a positive diagnosis was not made until then. Dr. Green, Superintendent of Health, then took charge, and with the assistance of Dr. Wimberley, managed the cases well.

June 3, 1899, Beaufort, Carteret county—Examined one case, white. Well managed by Dr. Frank Clark, Superintendent.

March 29, 1900, Robeson county—Inspected eight cases, five white and three colored. Some precautions had been taken. Drs. McNatt and Utley in charge.

Henderson, Vance county—I inspected one case, white. All necessary precautions had been taken by Drs. Cheatham and Bass, health officers.

April 1, 1900—Selma, Johnston county—Thirteen cases were inspected by me, seven white and six colored. Of these, two suffered with confluent type, one died. Moderate precautions had been taken by Drs. Wharton and Noble, health officers of county and town respectively.

April, 1900—Franklin county—Inspected four cases, all colored. Proper precautions were at once taken by Dr. Foster, Superintendent.

Small-pox has existed during this epidemic in all its forms, from the mildest to the most malignant confluent type, as expressed by Dr. Long. In every town and county in which I made inspections I made reports

to the town and county commissioners and local health boards, advising them as to the best possible means of stamping out and controlling the disease, without further spread. Also described the full technique of caring for patients and handling suspects, suggesting as thorough vaccination as possible in every section which I visited.

I advocate vaccination because I believe it to be the most powerful means of preventing the disease. I regard vaccine virus as the most active material that can be admitted into the list of our prophylactic remedies, and the only weapon of defense in overcoming the worst of human maladies.

The large majority of small-pox in the State has existed in a very mild type, in fact, the virtue of vaccination has so modified the disease that it is only in exceptional cases we have the opportunity of studying the malignant forms. I have had the opportunity in the present epidemic to examine only a few cases of the malignant forms of small-pox, and I am firmly of the opinion that such types of the disease can only exist in those who are absolutely without history of vaccination, and I mean by that, those whose parents and grandparents have not been vaccinated.

The protective influence of vaccination is so great that, from my experience, I am willing to assert that the vaccinated can only contract the disease by close and continuous contact or exposure. And if contracted then, it is of a mild and modified form.

Respectfully submitted,

Joshua Tayloe, M. D., Small-pox Inspector.

REPORT OF DR. HARRILL.

STATESVILLE, N. C., May 19, 1900.

Dr. R. H. Lewis,

Secretary State Board of Health.

MY DEAR DOCTOR:—At your request I hereby submit a statement of visits made by me as Inspector. My appointment was made about the middle of January last.

January 20—I visited New London, Stanly county, where I found seven cases of small-pox, colored.

February 4-At Thomasville I saw two cases, colored.

February 10-At Asheville I saw twelve cases, whites.

February 20 to 22—Near Walnut Cove, Stokes county, saw two cases besides six or eight others recovered, and in the same county, at Pinnacle, saw three cases. A local doctor refused to accept my diagnosis. The leading case, and the one upon which I based my opinion, was in a woman, forty to forty-five years of age, with an eruption about nine days old when I saw her. The cases at Walnut Cove and Pinnacle were all white people.

February 23—I saw one case at Pilot Mountain. I visited Reidsville and saw the celebrated cases in a seminary there. I have been informed that persistent efforts were made by a local physician to discredit my opinion. Repeated vaccinations were made, but without results. I am informed that one of the patients afterwards carried the contagion to her home in some of her clothing, and from this source there were two malignant cases, resulting in death. I saw in Reidsville twelve or four-teen cases, but the actual number at that time was probably three or four-times as many.

February 24-Visited Hillsboro. Saw two cases.

March 2—Visited Taylorsville and found six cases, all whites. Dr. H. F. Long also saw one of these cases, and confirmed my diagnosis.

March 24—I visited Jonesboro and found six cases in one family, all white. The mother and the grandmother in the same house had both been vaccinated when young, and both escaped the disease. I saw one other white man and two negroes with the disease.

April 16—Visited Shelby and found six cases in the same family of negroes. Another family of negro children had chicken-pox. At Mooresboro, one case, a negro man. At Fallston, in same county, I saw one case in a white man. Near Cleveland Springs, same county, I saw one case, a negro woman.

April 27—Visited Henrietta, Rutherford county, where I saw three cases, all negroes. One case reported at Caroleen, and one west of Ruthfordton that I did not see.

April 30—Visited Spray and saw three cases, all whites, besides several recovered and convalescent cases that I believe were the same disease.

May 1—Visited Madison and found that small-pox had been there four to six weeks. I saw one partly confluent case here. There had been in all about fifteen cases.

May 2—Visited Stem, Granville county, and found one case only developed, but a number of exposures.

This closes my list of visitations. There is a strong prejudice against vaccination, and decided opposition to any restriction or isolation of patients. Also, a determination to not believe there is any small-pox in the State. Unfortunately this belief extends to some of the doctors, and when one or more of that kind are in a community it is almost impossible to control the disease. I persuaded one doctor, a non-believer in vaccination, to go with me within thirty or forty feet of a well developed case. After seeing it, he decided that as he was practicing in the neighborhood, and had never been vaccinated, he ought to be.

In communities where the disease has been for several months, it is to be feared that there is already, and will continue to be, a relaxation of proper efforts to stamp out the disease.

Public meetings have been called in many places, and I have tried to advise the people about vaccinations. Hoping this imperfect report will be satisfactory, I remain,

Yours very truly,

L. Harrill, M. D., Small-pox Inspector.

## RESOLUTIONS ADOPTED.

The following resolutions were adopted by the Conjoint Session of the State Board of Health and the State Medical Society:

IN REGARD TO PURE FOOD, BY COLONEL A. W. SHAFFER.

WHEREAS, the health of the people is largely dependent upon the purity of their food and the reliability of their medicine, and is injuriously affected by the adulterations now so common in very many of the articles in daily use; and

WHEREAS, a bill to prevent such injurious adulterations, introduced by the Hon. Mr. Brosius, is now pending in Congress; therefore be it

Resolved, by the North Carolina Board of Health and the Medical Society of the State of North Carolina, in conjoint session assembled, that our Senators and Representatives in Congress be requested to give this measure their prompt and cordial support.

IN REGARD TO OUTSIDE INSANE, BY DR. HENRY W. LEWIS.

WHEREAS, recent official reports from the State Board of Charities show that there are in North Carolina, uncared for in asylums or other proper institutions, insane, epileptics and idiots to the number of eight hundred and sixty-six, and that there are probably as many more in the State who have not been reported; and

WHEREAS, it is a notorious fact that many of these people are confined in jails and county homes without proper care and attention, and undergo hardships and in many cases maltreatment—which of itself precludes the hope of improvement or recovery from their mental or physical condition; therefore be it

Resolved 1. That the paramount consideration is that these patients have proper treatment at the hands of the State of North Carolina, whereby the reproach now resting on us may be removed.

2. That it being notorious that the State institutions are already overcrowded, we urge the pressing necessity of such early increase of hospital facilities as will insure these proper care and treatment, and to this end we commend the plan referred to by Dr. P. L. Murphy in his paper read before the students of the A. & M. College at Raleigh, March 16, 1900—said plan being known as "The Cottage System."

IN REGARD TO SMALL-POX, BY DR. S. WESTRAY BATTLE.

The total number of cases of small-pox in the State for the year from May 1, 1899, to May 1, 1900, was 2,806, against 616 for the fifteen and a half months preceding—from the beginning of the epidemic on January 12, 1898, to May 1, 1899, an increase of 455.5 per cent. This means innumerable foci of infection, which in an indefinite number of instances, owing to entire neglect or imperfect practice of disinfection, are and will continue for months or years still active. Reports from superintendents of health show, on an average, about 10 per cent. only of the people as being vaccinated. The people seem to be generally indifferent or actively opposed to vaccination. The authorities, county and municipal, except in the actual presence of small-pox, do not appear to realize the gravity of the situation and the dangers which menace their people. In view of these facts, be it

Resolved, by the North Carolina Board of Health and the Medical Society of the State of North Carolina, in conjoint session assembled, that it is their opinion that in the present conditions the continued spread of small-pox is inevitable, with the strong probability of its reaching pestilential proportions during the coming winter, small-pox being much more virulent in cold weather;

That quarantine and disinfection in the present state of public opinion, and in view of the lukewarm support, to say the least, too often given the health officer, cannot be depended upon to prevent the spread of the disease;

That the thorough and complete vaccination of all the people is alone adequate to meet the situation;

That this, in most instances, can only be accomplished by compulsion, legal authority for which has been affirmed in the recent decision of our Supreme Court in State vs. Hay;

That we feel it to be our duty to notify the people of these facts, and the grave dangers which threaten them, and to call upon those who represent their interests, the various boards of county commissioners, boards of city aldermen and town commissioners, to take at the earliest practicable moment the necessary steps to secure the vaccination of the people, and we urgently appeal to our professional brethren throughout the State, individually, as well as collectively, to render every aid in their power, by both word and act, to the accomplishment of this most important object.

A resolution in favor of establishing the Appalachian Park was introduced and adopted, and copies ordered sent to our Senators and Representatives.

The resolution was as follows:

To the Senate and House of Representatives of the United States of America:

Whereas, it having come to the knowledge of The North Carolina State Board of Health and The North Carolina State Medical Society that there is now a movement on foot under the auspices of the Appalachian National Park Association for the establishment of a National Park and Forest Preserve in the Southern Appalachian Mountains, preferably in the Western North Carolina section or adjacent States, to be known as the Appalachian National Park; and

Whereas, those interested in this movement having presented a memorial to the Congress of the United States praying for the appointment of a commission to investigate the practicability, feasibility and necessity of establishing such a Forest Reservation and Park in the Southern Appalachian Mountains; and

WHEREAS, the Committee on Agriculture, of the Senate, to whom this matter was referred, having reported back to the Senate favorable upon the appointment of such a commission, and the Senate of the United States having passed the amendment as reported by the Agricultural Committee; and

Whereas, we believe that the cause of this Association is one deserving of the most careful attention at the hands of the Government; therefore be it

Resolved, that the North Carolina State Board of Health and the North Carolina State Medical Society indorse the movement of the Appalachian National Park Association, and that we earnestly urge the Senate and House of Representatives of the United States to obtain the careful investigation and report as requested in the memorial set forth by the Appalachian National Park Association.

# SANITARY INSPECTION OF STATE INSTITUTIONS.

#### THE CAPITOL.

His Excellency, Governor Russell.

SIR:—The undersigned, committee of the State Board of Health, having made a sanitary inspection of the Capitol building, would respectfully report as follows:

We found the plumbing apparently in good condition. The bathrooms, however, having been intended in the original plan, we were informed, for treasury vaults, are far from ideal, being entirely devoid of both light and ventilation, except what of both may enter through two little openings about 10 inches square in the top of the door leading into the hallway. The vault-like effect is increased by the color of the walls, which is very dark and sombre. These conditions, however, are of not much practical moment, as the rooms probably are not often used, and then only for a short time, but we would suggest, for appearance sake at least, that the walls be painted white.

The important sanitary question in connection with the Capitol building is its ventilation, which, to the sorrow of every Legislature, has been found to be practically as defective as it is theoretically. There is one open fire-place in each office, and four in each legislative chamber, with one each in the four rooms for clerks. At present the system of heating is by steam, direct radiators being located under every window. Just under the window-sill and about 18 inches above the floor end, a fresh air inlet flue 8 x 10 inches has been cut through the solid granite wall, closed with cast-iron gratings of rather heavy pattern at both ends, and provided with a shutter valve at the inner end. These inlets were doubtless provided with the idea of ventilating the rooms, but while they are of some use in that respect, they are very ineffective for this reason, that the radiator being situated several inches from the end of the flue, and unconnected with it, and being of itself of a very open pattern (round pipes with wide intervals between), it cannot get any pull on the air-it has no "purchase," so to speak, and the consequence is that the inflowing current of air is feeble. It is, morever, delivered into the room cold, for the reason that it cannot be held against the hot pipes until warmed. For the rooms occupied by the Governor and other State officials, this arrangement will answer very well, as they are very large and airy, with an open fire-place, and are occupied by very few persons. But with the legislative halls, which, from the sanitary point of view, are generally badly overcrowded, it is a very different matter, the various catarrhal troubles being caused not so much by cold as by foul air. The best authorities hold that every adult should have 3,000 cubic feet of fresh

air per hour, which means that if the cubic space allotted to him is 750 feet the air must be entirely replaced by fresh air 4 times in every hour, which is said to be the limit short of draughts. By way of illustration, let us take the hall of the House of Representatives. Owing to the curves and other irregularities it is impossible for us to calculate its exact cubic contents, but a liberal estimate would be 120,000 cubic feet. This would give 750 feet each for 160 people, which is probably its minimum population, the number present generally being much greater. To provide properly for this number, the air must be changed four times in every hour, but this cannot be accomplished except by an elaborate and costly system of artificial ventilation. Practically, however, this ideal system is not absolutely necessary, for the reason that the houses are in session only a few hours at a time. Still, for those few hours, the members should have better air, if it can be had. We believe its quality can be greatly improved and at comparatively little expense. To that end we would respectfully recommend:

- 1. That the present direct radiators in the two legislative balls—nine in number, under the nine windows in each hall, be removed, and direct—indirect radiators with an air-tight connection with the fresh air inlet flues above alluded to be instituted.
- 2. That the present gratings over the end of these flues be substituted by others of lighter pattern, so as to cause less obstruction to the current of air.
- 3. That all fire-places be opened, and that in the large hall openings be cut at the floor level in the two hollow square columns, one on each side, and large registers inserted, thereby making them outlet or foul air flues.
- 4. That during the sittings of the Legislature, fires be kept burning in all the fire places, not for heat but for ventilation, and that a steam coil be operated in the bottom of each of the columns referred to for the same purpose. We are told that this can all be done in both for about \$800 to \$1,000, and as the Museum is in need of direct radiators for the recent addition, the expense could be materially reduced by placing those discarded there.

We would advise the abandonment of the present method by bucket and chain of drawing water from the open well in the Capitol grounds, and the substitution of a good pump. The infection of drinking water to be dreaded is by the germs of typhoid fever. Any one nursing a case of this disease, or having a mild or "walking" case himself is liable to get his hands more or less soiled with the discharges of the patient. Should such a person draw water from a well rigged as this is, some of the typhoid bacilli would surely be left on the chain and bucket, and at the next descent they would be planted in the water and immediately proceed to develope. This may be considered as a remote danger, but it

is a real one nevertheless, and if the well were covered over and a pump or some well fixtures whose parts that reach the water cannot be handled be put in, it would certainly be safer, besides being more convenient.

> RICHARD H. LEWIS, M. D., A. W. SHAFFER, S. E.,

> > Committee.

#### THE SUPREME COURT BUILDING.

We found nothing deserving of criticism from the practical sanitary point of view in this building, except perhaps the method of heating the Supreme Court room itself—by direct radiation. This system, for the offices and libraries, is good enough, but if the court-room should be crowded the indirect system would be better. At the same time we can not say that the requirements of health demand it. It would simply be better.

#### AGRICULTURAL DEPARTMENT.

An inspection of this building revealed nothing unsanitary. A sewer man-hole under the Museum might come under that head, but work for its closure was in progress at the time of our visit.

A. W. Shaffer, S. E., Richard H. Lewis, M. D., Committee.

#### STATE HOSPITALS FOR THE INSANE.

#### THE CENTRAL HOSPITAL AT RALEIGH.

DR. GEORGE G. THOMAS, President N. C. Board of Health.

DEAR SIR:—In compliance with the instructions of the Board, we have made an inspection of the Central Hospital for the Insane, and beg leave to report as follows:

We found this institution in excellent condition, everything neat and clean and giving evidence of excellent management. We would, however, suggest a few improvements.

The old cement floors in the lavatories are cracked and therefore unsanitary. We would recommend their replacement with slate.

Some of the bedsteads are of wood and without springs. We would advise the substitution for them of iron bedsteads with woven wire springs.

The floors from the repeated oilings of years have become rough in places from accumulations of dried oil, and catch dust. They should be scraped and paraffined.

The partial water supply from Rocky Branch is bad, receiving as it does above the intake, the drainage of one or more slaughter-pens and sewerage from the A. & M. College. While this water is not used for drinking purposes, it should not be used for any purpose. We would urge its abandonment as soon as better water can be obtained.

The plumbing, so far as we could judge, without the use of special apparatus with which the Board is not provided, is in good condition.

#### THE DEPARTMENT OF THE CRIMINAL INSANE.

By act of the General Assembly of 1899, the unfinished western wing of the Penitentiary was ordered completed, and set apart for the accommodation of dangerous lunatics. Aside from the question of sentiment arising from the fact of its being a part of the Penitentiary building, it seems well enough adapted to the purpose. But the question of sentiment in the management of the insane is one that should not be ignored, and a different location is, therefore, desirable.

The four wards, one above the other, with sleeping rooms on one side, are large and well lighted, and while not ideally ventilated, the air space for the present number of inmates is so liberal as to practically remove objection on that score.

The water-closets we found in very bad condition. The closets themselves are perhaps good enough, but the sine qua non of water to operate them was, at the time of our visit, and according to the attendant in charge, generally, lacking. On attempting to flush them we obtained a feeble trickle of water on the first floor, entirely insufficient, but on the three floors above, not a drop. The fecal odor was quite pronounced, notwithstanding the free use of disinfectants. It is useless to say that this condition of affairs should be immediately remedied.

We would also recommend that the present plank floors in the lavatories, which are loose and irregular in places, be replaced with some non-absorbent material as slate, or at least be relaid and paraffined.

A. W. Shaffer, S. E., Richard H. Lewis, M. D., Committee.

THE STATE HOSPITAL AT MORGANTON.

THE HONORABLE, THE BOARD OF DIRECTORS,

State Hospital, Morganton, N. C.

Gentlemen:—In response to your request, and in compliance with our duty under the law, we, the undersigned, a committee of the State Board of Health, made an inspection of the institution under your care, inquiring particularly into the probable cause of three cases of typhoid fever among the patients, the water supply and the crowded condition of the wards.

Typhoid Ferer.—We must admit that we were unable to definitely locate the origin of the disease. We could not trace it to any influence peculiar to the Hospital, however. The very small number of cases of itself was conclusive evidence that no cause common to any large number of the inmates could be operative. Our conclusion is rendered more probable by the fact that two of the three cases were allowed outside liberty, and as typhoid fever is endemic in the mountains of our State there is simply no telling how they were infected. The third case, which was strictly confined, was peculiar in some respects, and from the statement made to us by the attending physician, might, as he suggested, have been some other disease.

The Water Supply.-While the supply now available is perhaps sufficient for the present actual needs of the Hospital, it is very desirable, to say the least, in all institutions of this character the supply of good water should be more than just enough for actual needs. In view of this and of the probable increase in the near future of your population, which would make more water a necessity, we would suggest that immediate steps be taken looking to an augmentation of your supply. Upon inquiry we learned that additional water would have to be obtained from one of three sources—bored wells, Hunting Creek or Long Branch. Owing to the uncertainty of the amount and continuance of flow from bored wells not strictly artesian, and to the danger of contamination of Hunting Creek from the settlements upon its water-shed, it appeared to us, on general principles, that Long Branch was the most desirable source. We, therefore, in company with your Superintendent and Engineer, made an examination of that stream and, to some extent, of its water-shed, at the same time inspecting the source of your present supply, Black Fox Branch. In regard to this latter we take pleasure in saying that but for its limited quantity it would be altogether ideal. Long Branch, with nearly three times the volume of Black Fox, would be equally as good but for two or three settlements on its water-shed. As it was, we were very much pleased with it as a supply.

We would recommend specifically:

- 1. That the present water supply be materially increased as soon as possible.
- 2. That a pump connected with the present pipe line be located on Long Branch just above its junction with Black Fox, not only to lift its waters over the highest point in the line, but by the addition of a vis a tergo to the present force of gravity to increase the rapidity of current through the pipe—which is, of course, necessary to an increase of delivery.
- 3. That, if possible, the water-shed of Long Branch be purchased in its entirety while lands in that locality are cheap and all human habitations removed.
  - 4. That, failing in this, a competent man residing in that immediate

neighborhood, if he be obtainable, be employed to run the pump and guard the water shed. Being on friendly terms and in sympathy with his neighbors, and living very near the water-shed, he would be much more likely to secure protection from contamination than would an occasional inspection from the Hospital.

The flow of this stream, we learn from Dr. Murphy, is about 350 gallons per minute, which probably represents the minimum, as the measurement was made during a dry time in the fall. This added to that furnished by Black Fox—150 gallons per minute, say—would represent a supply for twenty-four hours of 720,000 gallons. This would constitute an ideal water supply certainly sufficient for many years to come, and probably for all time, as the population of the institution is not likely to reach a higher figure than 3,600.

While we hardly think the gangwells now in use can be contaminated, still they are below the barn, and it might be as well to disconnect them from the other supply and utilize them for filling the reservoir for fire and purposes other than drinking. We do not insist on this.

Overcrowding. - We regret to say that we found too many patients for the legitimate capacity of the Hospital, there being in some of the wards nearly twice as many as were provided for in the design. It is needless to call the attention of your honorable Board to the fact that overcrowding is one of the unpardonable sins in hospital management, as we feel sure that you are already aware of it and bave yielded your better judgment only under duress-in response to the heart-rending cries for help that come to you from all quarters. This overcrowding is not only detrimental to the general health, thereby interfering with the specific recovery of the present inmates, but it leaves no room for the reception of acute cases that could be cured if promptly brought under proper care and treatment-cases which if neglected for any length of time are apt, in too many instances, to become hopeless. But unfortunately consignment to a life of mental alienation is not the only consequences of lack of prompt treatment. In no inconsiderable number of cases—23 now in your institution, we are informed, and how many that have never been able to secure your protecting care it is impossible to say-women in the early stages of their affliction are debauched. As is well known undue prominence of the sexual instinct is a frequent accompaniment of insanity, the patient has lost her self-control, she is not responsible, she cannot give consent, for morally she is a child, and whatever may be the legal construction of the offense it is essentially rape. The mere mention of this crime stirs to the depths the soul of every man worthy of the name. We stop at nothing to punish the offender and to prevent its repetition, and yet, indirectly, in the manner indicated, to save a few dollars, we expose to this deepest degradation the most helpless class of our women, those who above all others have a right to demand protection from the State. It will not answer to say that every family should guard its own, for the true condition of the afflicted one in this respect is not always known, and the conditions are such in many families, where every one is of necessity a bread-winner, that proper protection cannot be afforded.

It is unnecessary for us to give the many other forcible reasons why all the insane should be provided for, but we can but feel that our legislators have not fully realized how urgent the need for more accommodations for this pitiable class of our people is, and that when they do they will provide for them.

We cordially approve the proposed cottage plan for the settlement and use of the milder cases now in the Hospital. In company with your Superintendent and other officers of the institution we carefully went over the various sites suggested for the location of such a building and decided that, looked at from every point of view, that situated between the road leading to the meadows on Hunting Creek and the present slaughter-pen was best adapted to the purpose.

General Inspection.—We found the buildings and grounds in their usual excellent condition, the only exception noted being the consequences of the overcrowding referred to above, and were impressed, as we have always been in our visits of inspection, with the admirable management that has characterized the institution from its foundation.

GEORGE GILLETT THOMAS, M. D., RICHARD H. LEWIS, M. D.,

Committee.

### THE EASTERN HOSPITAL AT GOLDSBORO.

DR. GEORGE G. THOMAS,

President North Carolina State Board of Health.

By your appointment, we on July 13th made a sanitary inspection of the State Hospital at Goldsboro, and we respectfully beg leave to report:

We found every evidence that Dr. Miller and his assistants had been putting forth much effort to keep the Hospital, out-buildings and premises as a whole in a good sanitary condition.

The floors to halls and wards of main building looked clean from the frequent dry-sand scourings to which they had been subjected. The walls generally were beautifully white, though rough, from long repeated applications of "white-wash." Sulphur gas is used occasionally to disinfect the wards, and the inmates are made to practice bathing at frequent intervals.

Notwithstanding great diligence along these lines is being pursued, yet the smell of urine and the odor associated with overcrowding are clearly perceptible and the stain of sputa marks the floor and walls of some of the wards.

Our criticism as to the floor is this: Notwithstanding its double thick-

ness it is made of porous material, and is in many places rough, badly worn and marred by large fissues between the planks, which have become filled with dust. Such a floor is thoroughly absorbant and will, in an institution of this kind, in spite of every effort to the contrary, become contaminated with sputa, urine and other filth. Much could be added to the healthfulness of the Hospital, if after properly repairing and polishing the floor, it were periodically subjected to at least two coats of enamel paint. From a sanitary standpoint a floor thus kept is well-nigh non-absorbent, easily washed, and therefore far preferable to an unpainted one, no matter what method of washing or rubbing may be used.

The walls, though kept as a whole nicely white by periodic lime washings, are not the best. The method is objectionable from the fact that the walls become rough and scaley, thus affording a splendid chance for the accumulation of dust and a hiding place for infectious germs. Besides, lime soon looses its antiseptic powers. A much better wall is one of hard plaster, capable of being well rubbed down, polished and painted, and washed every few months with some disinfectant liquid if need be.

The institution is badly overcrowded. Tubercular patients are from force of circumstances made to occupy wards along with the non-tubercular. This is a sad truth, and demands correction.

The drinking water for these 460 inmates, judging from their past exemption from "drinking water diseases," is decidedly healthful. Yeton account of the close proximity of the stables of several horses and a great many milch cows (only a few yards distant) to the well, the water stands in great danger of contamination; for its purity is at any moment liable to be impaired by the sudden soakage of foul liquids through the soil.

(Signed) J. L. Nicholson, M. D., ALBERT ANDERSON, M. D.,

Committee.

## STATE SCHOOLS.

## THE UNIVERSITY.

TO THE HONORABLE, THE BOARD OF TRUSTEES.

GENTLEMEN:—On January 31st, the undersigned, a committee of the State Board of Health, in compliance with the provisions of section 3 of the Act in Relation to the Board of Health, chapter 214, Laws of 1893, made the usual sanitary inspection of the institution under your charge and respectfully beg leave to report as follows:

We were cordially received by President Alderman, and all the facilities for making the investigation requested were cheerfully furnished.

The general sanitary conditions, with one notable and one minor exception, we found very satisfactory.

It was suggested that the mode of heating the dormitories—wood fires in open fire-places—was antiquated, inconvenient, expensive and in very cold weather inadequate, causing often decided discomfort, to say the least. These criticisms are doubtless well founded, but at the same time it remains equally true that from the hygienic point of view the open fire-place for heating and ventilating living and sleeping rooms has never been improved upon, if equalled, in this climate. The rooms are large and airy with abundant air-space for the two students occupying them and thoroughly ventilated by the chimney draught. They are, moreover, very well lighted. The "Spartan simplicity" which almost universally obtains in their furnishing—the general absence of carpets, those great germ collectors, and of heavy window curtains keeping out the pure air and purifying sunlight—while it does not appeal, we must admit, to the æsthetic, it does to the sanitary eye, under which aspect we have considered the subject.

The notable exception to the generally good sanitary condition referred to is the totally inadequate water supply. Upon going to inspect the lavatory we were surprised to find the door locked. Asking the cause, we were informed by the janitor that the water was out. An attempt to flush the water-closets verified the statement. Owing to the same cause the baths had fallen into practical disuse. The bearing upon the general health of cleanliness of the person and of regularity in the bowel functions is so well known that it is unnecessary to dwell upon it further than to say that in our judgment many a student in the past has suffered in health from habitual constipation, the foundation of which was laid by the irregularities resulting from the discomfort and inconvenience of the necessary walk into the woods in cold and rainy weather. The researches of modern medical science have shown the evils of constipation to be much more serious and far-reaching than was formerly supposed.

The present water supply which is obtained from two large wells in the campus, fed, it appears from investigations heretofore made, solely by the ground water of the plateau on which the college buildings are situated is even now, in winter, entirely insufficient, and as the level of this ground water must be gradually lowered by the constant pumping it is only a matter of a few years when it will be practically exhausted. The subject having been brought to the attention of the last General Assembly, an appropriation of \$7,500 was made to provide a new and adequate water supply. Upon inquiry of President Alderman, we learned that the plans and specifications for a system narrowed down to the lowest notch had been prepared by Mr. Ludlow, the sanitary engineer of Winston, but that its construction could not be accomplished with the means provided. The proposed source of supply, Bolling's Creek, above the railroad crossing, a rapid stream derived from a sparsely settled and largely wooded water-shed, brawling over a rocky bed, we cordially commend as being as near perfection as is obtainable in the environs of

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Chapel Hill. We beg to say, however, that while the plan of the waterworks is generally excellent, it is, in our opinion, defective in having no provision for filtration of the water and in being too restricted in its distribution—to conform, no doubt, to the meagre appropriation. The chief object in installing the water supply is to protect the health, add to the comfort and foster the self-respect of the student body. According to the present plan, which, as we understand it, delivers water only to the one general lavatory and to the laboratories, this object cannot be fully attained. There should be in every dormitory building one or more baths and at least one water-closet for use in case of sickness and at night in bad weather.

Another aspect of the water question in its relation to the student body is this: Owing to the lack of dormitory accommodations in the buildings nearly one-half the students reside in the village and about four-fifth's take their meals at the various hotels and boarding-houses. As is well known, a large proportion of the water drunk is taken with the meals. A proper consideration of the water supply therefore must include that of the village. This latter is obtained entirely from wells. Wells, especially in towns, are very liable to infection. This infection is brought about usually in one of two ways—by seepage through the soil into the well from nearby unsanitary surface privies and by direct contact of contaminated hands with the bucket and chain, almost universally employed in open wells. It is not difficult to understand how this infection can be accomplished by a patient with a "walking case" of typhoid fever, or by a nurse of a case of that disease. It follows, therefore, that wells should, whenever practicable, be superseded by a safer supply. A slight amplification of the present plan in running small laterals from the main conductor pipe to drinking fountains, within convenient distance of most of the hotels and boarding-houses and the addition of an approved filter which latter should by all means constitute a part of the system in any event—would practically accomplish this. In our judgment this amplification is very desirable and filtration of the water should undoubtedly be provided for. The stream furnishing the water would be unfit for use unless it were filtered during a large part of the winter and spring when the University is in session.

We have dwelt upon the subject of water supply because the one dangerous disease of all others against which college students should be protected is typhoid fever, the poison of which is in an immense majority of cases introduced into the system through the drinking water. The recent dreadful scourge of the State Normal and Industrial College by this disease, caused by an infected well, enforces our contention far more eloquently than anything we could possibly say.

The minor exception alluded to in the beginning of this report is the lack of water facilities in and the location of the Infirmary. It is unnecessary to dwell upon the importance of bathing facilities in a hos-

pital, nor upon the desirability of quiet surroundings, and, in case of contagious disease, of sufficient distance from other inhabited buildings. During the current session these two last points have been emphasized by a dangerous relapse in a case of typhoid fever occasioned by the noisy hilarity of a body of passing students, and by the inconvenience and more or less uneasy feeling, to say the least, arising from the recent case of small-pox. In passing, we feel constrained to say that we cannot commend too highly the admirable and successful management of this outbreak of small-pox by the authorities of the University, nor the manly and sensible behavior of the students in relation thereto.

#### RECOMMENDATIONS.

We would respectfully commend:

- 1. That every effort be made to install as soon as possible the proposed water-works. That the plans already made be amended by the addition of an effective filter and by its extension in part to the village as indicated in the body of this report.
- 2. That steps be taken to secure the sanitary supervision by the authorities of the University of the premises of all hotels and boarding-houses patronized by students, with a view especially to the protection from contamination of the wells used by them. This supervision could, of course, be exercised with the consent of the proprietors, but we feel sure that the privilege would be freely granted. Should there be objection on the part of any of them, however, we would suggest that a list be made of all hotels and boarding-houses permitting inspection and carrying out in good faith the directions given for their sanitary care, and that said list be furnished to all students immediately upon arrival and be also sent to their parents or guardians. Believing in as little interference with private affairs as a due regard for the public health will permit we think it would be sufficient to confine the supervision to the protection of the drinking water. To this end these three things should be insisted on: (a) That no privy be allowed within one hundred feet, at the very least, of any well; (b) That the Rockford, or tub and dry-earth, system be applied to all surface privies, and that the tubs be emptied with sufficient frequency; and (c) That all open wells be closed and a pump be substituted for bucket and chain. To no well in the whole town is this last suggestion so applicable as to the old college well in front of the South Building, the waters of which are drunk by every student. As it stands, it can be infected, but if closed in and fitted with a pump it would be, we believe, impossible, and no sentimental regard for "the old oaken bucket" should prevent the change.
- 3. That the Infirmary be moved to a more retired part of the campus and that it be supplied with water facilities as soon as practicable.

GEORGE GILLETT THOMAS, M. D., RICHARD H. LEWIS, M. D.,

Committee.

## STATE NORMAL AND INDUSTRIAL COLLEGE.

The inspection of this institution was of peculiar importance and interest, owing to the very serious outbreak of typhoid fever among the students in November, 1899. In addition to the report of the regular committee of the Board, extracts from the editorial columns of the monthly Bulletin for November and December, 1899, embodying the history of the epidemic, and the report thereon made to the public through the newspapers at the request of the Board of Directors of the College by the Secretary of the Board of Health, are given below:

DR. GEORGE G. THOMAS,

President State Board of Health.

Doctor:—Pursuant to your order designating the undersigned to make the stated annual inspection of the Normal College and the A. & M. College at Greensboro, supplemented with a hurry order on Saturday last, on account of a threatened epidemic of typhoid fever at the first named institution, we beg to report progress and proceedings as follows, to-wit:

We reached Greensboro Sunday night and the Normal College early Monday morning, November 19th. Three deaths had occurred during the previous week and some sixty or seventy students were on the sicklist. The exercises had been closed that morning; all who were able to travel had left, or were leaving, as rapidly as possible, and the diagnosis of typhoid fever was very generally accepted.

Under these conditions, we thought best to devote as much of our time to the sewerage and drainage system as possible, and in reply to our request for a diagram of the grounds, buildings and drainage system, were informed that there were none at the institution, and so far as known, none existed. So with the best assistance obtainable, which was freely given, we repaired to the grounds. The surface about the buildings and moist places everywhere was covered with carbolic acid and lime, and a party of plumbers from Odell's plumbing shops in Greensboro was engaged beneath the buildings at the northeast corner of the college grounds, taking out the underground drain, or sewer pipe, shown on the accompanying diagram as starting at the northwest corner of the dormitory, passing beneath the scullery and entering the "new sewer" at a distance of about 17 feet. A rough sketch of the second floor of these buildings, kindly furnished by Mr. Hannah as we came away, shows that this pipe receives the drainage from the bath-rooms and closets of

that floor. If it had any other connection it had not been found when we left at 12 o'clock the next day. The operations at this point had been induced by the detection of offensive odors there in the search for a possible cause of the outbreak of fever on the Saturday preceding our arrival. The upper end of the pipe referred to (5 feet) was of iron, followed by twelve feet of earthenware pipe. The joints of these earthenware pipes were leaking, and the earth in the trench was saturated with the drainage, the pipes soaked through and rotten. These were replaced by the plumbers with iron pipes, lead-jointed.

Formerly, all the sewage and drainage of these buildings ran down the "old sewer" and the "roof and kitchen drain" shown on the diagram, and emptied into a small stream having its source near the grounds and running along the east boundary northward. About four years ago (1895) the new sewer was put in, emptying into a somewhat larger stream, having its source on the west side of the grounds and running northerly, like the other. The mouth of this sewer was about half a mile away, while the first was but a few hundred feet. The drainage of these buildings was supposed to be turned into the new sewer and the old sewer and drain sealed up and abandoned.

Inspecting the stream on the west side of the grounds, we passed down to the mouth of the new sewer and passed over to the stream on the east side, striking it at a considerable distance below the mouth of the old sewer, where we were surprised to find offensive odors and the stream loaded with a substance of offensive odor that covered its bed everywhere. At the month of the pipe we found a small stream of discolored water flowing from it, and having the same offensive odor. The water of the stream above the mouth of the pipe was clear, the bed free and the air sweet. We returned to the grounds or campus, and a party was set to work opening the pipe at the point where the old sewer received the drain pipe from the east front of the building on the north side of the street. The first was dry, and the second carried the same stream and offensive odor. So we crossed the street and opened the drain-pipe at a point between the power-house and kitchen, where the stench was so great that they had to fill up the opening and first expose a considerable length of pipe, then smash and leave it to "aerate" for a while, and in that way the work was being carried up along the wall of the kitchen with intent to follow it to its source or head, raze the whole system and change the connections into the new sewer. When we left next day this pipe was pointing in a dead straight line for the meat-house, against the north wall of the great dormitory, in the floor of which, where shown, was a drain recently closed, and the floor strewn with carbolic acid and lime because of the offensive odors found in the room. Everybody, we think, believed, certainly nobody present denied, that this opening, together with the five down pipes from the roof and the kitchen drain entered the drain-pipe, and that the meat-house opening was the

head of it. Upon our return home we received by wire from the President the information that later developments show that this opening does not enter the drain, but enters another pipe running eastward into the garden. Unfortunately this error of inference got into expansive circulation, and if it keeps on growing can only be stopped after it has dumped all the college sewage into the meat-house.

The water used at the College is obtained from three wells on the grounds and the city water-works. A chemical analysis has been very recently obtained from the State Chemist, in which the water from the wells is reported as free from deleterious chemical matter and that from the city water-works "very bad." The bacteriological analysis—requiring more time—had not been received, and we are therefore unable to make any report upon the question of typhoid germs in the water. The well nearest the defective pipe—about one hundred and twenty-five feet—is about ten feet above that pipe at the surface of the ground. It is sunk through some fifteen feet of earth and the remainder is blasted through solid rock. It has, however, been temporarily dismantled and closed.

We found the inside face of exterior underground basement walls discolored with water passing through the walls, and the east basement of the Administration building, used for chemical purposes, we believe, had standing water on the floor in one corner, a prolific source of rheumatism.

The plumbing, notably in the dormitories, has been bad. The ceiling beneath almost every lavatory and bath has been saturated with water, the plastering has fallen and been replaced. Later the plumbing seems to have been repaired, and the ceiling, though stained, is dry.

A very considerable increase of students this year has filled the dormitories, we think, beyond their normal capacity for health or comfort. Rooms having a capacity of 2,000 cubic feet have two students. Others with a capacity averaging 2,400 cubic feet have three students, and others of 3,200 cubic feet and upward have four students, while corner rooms, with three to four windows and less space, have also four students. These measures are more approximate than accurate, but as many students have two trunks, it seems plain that when the necessary beds, tables, chairs, desks, stands, lavatories and book-racks are in place there isn't much room or floor space left to turn about in.

The dairy farm, the barn, stables, cattle-yards and piggeries are all located on a third water-shed, draining into a third stream on the west, running parallel to the others, only the dairy building proper being on a small spring-branch running eastward and emptying into the middle stream above the mouth of the sewer. We found this department in excellent order and condition throughout, except, perhaps, that the wire fence dividing the stock pasture from the stream carrying the sewage

from the College ought to be strengthened, so as to prevent all possibility of the cattle reaching that stream through or over the fence.

It is scarcely necessary for us to add that in the performance of our assigned duty we have had the full, free and cordial support and assistance of the President and every officer of the institution, though sorely oppressed with the constant labor, care and sorrow brought upon them by a sudden and terrible affliction.

We beg to submit to the Boards, and commend to the favorable consideration of the College faculty, the following suggestions and remarks, most of which were communicated orally to Dr. McIver, President, and some of which were being carried out on the grounds when we left:

- 1. That all the "old" sewer and drain pipe be traced up to their heads by exposure of the pipe; all sewage and waste from the buildings turned into the new sewer, and all the sewage and drainage-pipes of the old system, not wanted to carry surface water alone, dug up and removed, and the old connections sealed.
- 2. That the stream into which the new sewer now discharges be straightened and deepened from its head in the college grounds to the northern limit of the property, and the brush on its banks for the space of five feet or more be eradicated and so maintained.
- 3. That the exterior face of all brick walls inclosing an underground room or basement used by students or employees be trenched from the surface of the ground to the bottom of the first brick course, the walls thoroughly cleaned of all earthy matter, the joints opened if of lime mortar, the brick wall wetted down and a plaster coat of one part Portland cement and three parts clean, sharp sand applied from first course of brick up to and above the ground line, and well trowelled, then refill and ram down well the clay in the trench as soon as the plaster has set.
- 4. Strengthen the wire fence along the east side of pasture so as to make impossible any access of the stock to the stream carrying the college sewage, as hereinbefore suggested.
- 5. That a topographical survey and diagram be made, showing the ground plan of every building, sewer and drain-pipe, well, hydrant, fountain, tank, water supply pipe, cistern, drive or walk on the college campus proper. This can be easily and cheaply multiplied by photolithography for the use and information of all concerned, including the State Board of Health.

Remarks.—All well water is at its best when most agitated and aerated, and the best known agitator is an endless galvanized chain with galvanized disk cups attached, passing downward free, turning on a wheel fixed at the bottom, and rising to the point of discharge through a cucumber wood pipe.

2. No conductor pipe made of red clay, within the knowledge of the writer, is fit for conducting sewage. It cracks in the baking or burning,

leaks and rots when the salt glaze is destroyed, and, however low the first cost, is the dearest sewage conductor pipe on the market.

All of which is respectfully submitted, this 24th day of November, 1899.

HENRY H. DODSON, M. D.,
A. W. SHAFFER, S. E.,

Committee.

RALEIGH, January 28, 1900.

DR. GEORGE G. THOMAS, President, etc.

DEAR SIR:—Pursuant to orders, I made the final inspection of the changes, repairs and improvements lately inaugurated at the State Normal and Industrial College, Greensboro, N. C., on the 26th inst.

I found all the earthenware sewer and drain-pipe beneath the buildings replaced by iron pipe, hemp-caulked and lead-jointed, and all the saturated clay about the point of leakage removed and replaced with dry sand. The northeast, or central, well and that at the Teagne house and the one at the wooden dormitory had been filled up and abandoned. All four of the buildings facing the street south of the College grounds—sometimes occupied by the college students—are now using city water for all purposes, and are connected with the College sewerage system. The meat-house and the butter-closet have been discontinued, and a new meat-house is building in the open ground near the old site, to which are added improvements in the nature of cold storage.

For purposes of disinfection with formaldehyde two Kny-Scheerer Co. generators were purchased, together with five carboys of formalin. Sixteen ounces of solution of calcium carbide and formalin were consumed for every 1,000 cubic feet of space in sealed rooms, halls, closets, passages, etc., throughout the buildings. All the plastered walls and ceilings have been fresh calsomined and all the wood-work washed with a 1 to 1,000 solution of bichloride of mercury, and, with the exception of the Administration building, repainted or varnished. The old bedsteads and mattresses are replaced with new and single ones, and all the bath-tubs are new, open, iron, porcelain-lined, in rooms well heated and ventilated.

One large Loomis-Manning water filter had been ordered but not yet arrived, having a guaranteed capacity of 20,000 gallons a day, which was estimated to be ample for the filtering of all the water used upon the College grounds for any purpose short of flushing and irrigation, including the dairy and stock-yards. There will also be provided four Waterhouse-Forbes patent water sterilizers, one for each dormitory, the diningroom and the Administration building, through which all drinking water will be passed before use. One of these is now in place and operation near the dining-room.

The exterior walls of all underground rooms designed for use have been trenched to the foundation brick-course, the face cleaned and wetted down and a coat of strong Portland cement-plaster applied; the trench refilled, rammed down, and the surface graded to a water-shed from the buildings, as heretofore recommended; and everything heretofore recommended has been accomplished except the clearing up of the west water-run, and the preparation of a diagram of the College buildings, walks, drives, sewerage and drainage system, etc.

President McIver assured me that as soon as the filter could be put in operation he would draw and send to Dr. Anderson for analysis a sample of so filtered and so sterilized water, and report the result to the State Board of Health.

All which is respectfully submitted.

A. W. Shaffer, S. E.

[From the Bulletin for November, 1899.]

# TYPHOID FEVER AT THE STATE NORMAL AND INDUSTRIAL COLLEGE.

It is with deep regret that we note the outbreak of typhoid fever at the State Normal and Industrial College for Women at Greensboro, on such a large scale as to cause the suspension of the school. We believe this institution to be one of the greatest powers for good in North Carolina, and the present condition of affairs can only be regarded as a public calamity.

About three weeks ago cases of sickness began to occur which were supposed to be malarial fever. They became so numerous, however, that President McIver asked for an inspection and advice from the Board. The committee already appointed by the President of the Board to inspect, in regular course, the State institutions at Greensboro, the Normal and Industrial College and the A. and M. College for the colored race, composed of Dr. Dodson and Colonel Shaffer, were promptly notified by wire, and in person and with equal promptness responded. They have not yet made their report, and, indeed, cannot do so until the report of the bacteriologist on the water supply is received. The only thing discovered by them in their personal inspection of the premises was a leaking soil-pipe from ten water-closets in the main dormitory, which had saturated the soil in the basement under the butler's pantry, and within eighteen inches of an opening in the wall of the butter-room. This leak was located and remedied just before their arrival. In the absence of other apparent cause this was generally regarded as the probable origin, but no opinion can be given, of course, until we hear from the bacteriologist, as infected drinking water is so much more likely to be the cause in an immense majority of cases of typhoid fever.

It should be said, in justice to the city of Greensboro, that the cause, whatever it may prove to be, seems to have been strictly local, as students boarding outside have not been affected, the sickness being confined to those sleeping and eating in the buildings.

According to our latest information there have been about one hundred cases of sickness, with three deaths, but while some are convalescent, there are very many still sick, and the final result cannot yet be foretold.

We sympathize most sincerely with the stricken young ladies and their parents and friends, but with none more than with the devoted President of the College, Dr. McIver, who, we verily believe, carries them all on his heart. But, as we understand it, no blame whatever can be attached to him, or the management, and we feel confident that by the re-opening of the College on January 2, 1900, everything will be in better shape than ever before, and that the students can return with perfect safety.

"Great epidemics are great reformers," it has been said, and while this outbreak cannot be classed in that category exactly, it is such from the point of view of the College. We have deplored in these columns for years the discouraging indifference of our people to the importance of sanitation. But they are being taught. The small-pox epidemic of last winter and spring, mild as the disease generally was, has made a decided impression on the public mind, and this striking and tragic object-lesson in an institution having representatives from every county in the State save one, we believe, will spread and deepen still more this impression. As the ultimate consequence of this present affliction we believe it not unreasonable to assert that hundreds of lives will be saved in our State. It has prepared the ground, and seed sown on good ground can be counted on to bring forth some thirty, some sixty and some an hundredfold.

In this connection we think it opportune to call the attention of the people (we hope the newspapers of the State will aid us in giving it publicity) to a provision of the act of 1893, that, we regret to say, has been almost invariably honored in the breach rather than the observance by the parties interested—so far as the State Board of Health is concerned, at any rate, though the advice of local boards may have been sought. It is section 19, chapter 214, Laws of 1893, and reads as follows:

"Section 19. The said board shall from time to time consult with and advise the boards of directors of all State institutions, the authorities of cities and towns, corporations or firms already having or intending to introduce systems of water supply, drainage or sewerage, as to the most appropriate source of supply, the best practicable method of assuring the purity thereof, or of disposing of their drainage or sewage, having regard to the present and prospective needs and interests of other cities, towns, corporations or firms which may be affected thereby. All such boards of directors, anthorities, corporations and firms are hereby required to give notice to said board of their intentions in the premises and to submit for its advice outlines of their proposed plans or schemes in relation to water supply and disposal of sewage, and no contract shall be entered into by any State institution, city or town for the introduction of a system of water supply or sewage disposal until said advice

shall have been received and considered: *Provided*, *however*, that any city or town having a regularly organized board of health may seek advice therefrom or from its county board of health in lieu of that of the State Board."

Since the above was written we have spent several days at the College and a full report will appear in our next issue. Suffice it to say, for the present, that the first cases, to the extent of about sixty per cent. of the whole number, were undoubtedly malarial fever, all recovering in from four to ten days under quinine; that the total number of deaths to December 1st is seven; and that two of the wells used for drinking purposes, including the central well used by all the students, have been found by the bacteriologist to be infected.

[From the Bulletin for December, 1899.]

# THE OUTBREAK OF FEVER AT THE STATE NORMAL AND INDUSTRIAL COLLEGE.

(CONTINUED).

In our last issue we made a preliminary statement in regard to the subject set forth in the title of this article, and promised to give in the present number of the Bulletin a fuller report. To meet the deep and widespread interest felt in this matter as promptly and thoroughly as possible, we prepared for the press, at the request of the Directors of the College, a report which appeared in the morning papers of the State on December 3d. As another report would necessarily be mostly repetition of that, and as many of our readers doubtless did not see it, we reprint it. To those who have read it we would suggest skipping to the "Supplementary Report," in which will be found certain new facts of interest and value obtained since the original report was written. The report of December 3d was as follows:

The recent outbreak of fever at the Normal and Industrial College at Greensboro has excited in the hearts of the people of the whole State the deepest sympathy and concern. The greatest interest in the origin of the epidemic is naturally and properly felt by all. Rumors have been started having no basis in fact. To correct any misapprehensions, and for the information of the people of the State, the Board of Directors, at a meeting held at the College on November 30th, requested me, as Secretary of the State Board of Health, to prepare and give to the press an official statement of the facts as ascertained to date. I was instructed to be perfectly frank, concealing nothing. If, therefore, anything of importance should happen to be omitted from this statement the reader may rest assured that it was not intentional, but the result of a poor memory, or the hurry that very busy men cannot always escape.

Learning Friday night (November 24th) that the Board of Directors

of the College would meet on Monday, and knowing that the committee of the Board of Health which made an investigation early in the week would not be able to get in their formal report in time, I felt it to be my duty, as the executive member of the Board of Health, to make a personal investigation and be prepared, as far as possible, to enlighten and advise the Directors if desired by them.

Accordingly, I repaired to Greensboro early Saturday morning, and remained there until Tuesday morning, spending the whole time from breakfast to bed-time, except Sunday morning, at the College.

After talking over the whole matter with President McIver, my first inquiry was

"THE NATURE OF THE FEVER."

Requesting an interview with the physicians in charge, it was promptly accorded, and I had a very full and satisfactory conference with Dr. Gove, the resident physician, and Dr. W. P. Beall, the chief consultant, which convinced me beyond doubt that the first cases, about sixty of the total number of one hundred cases, beginning about October 25th, were malarial in character. For the benefit of the medical reader, I will state that this conclusion was based upon the description of the attack given by the doctors, the presence of the plasmodium malariæ in the blood of six of the eight cases whose blood was examined microscopically (I verified this by a personal exexamination of two specimens that had been kept), and recovery in from four to ten days under quinine. remaining forty cases in round numbers were clearly typhoid fever. this number about ten seemed to have been the subjects of a double infection, with both malarial and typhoid, and the remainder uncomplicated typhoid, typical in character. I was also informed that the sickness was strictly limited to students who ate and slept in the College.

Having satisfied myself as to the nature of the sickness, my next step was to ascertain, if possible, the cause or causes of both. We will first consider

### THE MALARIAL FEVER.

The only thing about the premises I could find at all likely to produce malaria was a narrow marshy valley, carrying a very small stream—so small as to be scarcely perceptible in places—immediately in the rear of the row of buildings composed of the President's house, the wooden dormitory, the Infirmary and the horse-stable. Upon inquiry, I also learned that mosquitoes had been very abundant.

But in this connection it should be said that malarial diseases have been unusually prevalent this season in the hill country of the State. The reports from the county superintendents of health for September, published in the monthly Bulletin of the State Board of Health for October, showed malarial fever present "in all parts" of Alamance, Cabarrus, Caswell, Davidson, Guilford, Mecklenburg and Rowan. It is

fair, therefore, to assume that some of the students brought the malaria with them from home, but others, perhaps many, were unquestionably affected at Greensboro, as at least two girls from the mountains had malarial fever. [Malarial fever, I learned, had also been very prevalent this fall in the houses to the northwestward of the College, the nearest case occurring in September in a house not more than two hundred yards distant.] Information obtained on a subsequent visit.

It should not be forgotten that this has been an exceptional year for malaria in the middle section of the State.

#### THE TYPHOID FEVER-ITS CAUSES.

Typhoid fever is essentially a filth disease, the germ of which is known as the bacillus typhosus, a motile, water-borne bacterium, which once introduced into water, or milk, or moist filth reproduces itself with fearful rapidity by fission or splitting in half. The media of transmission of this germ are in the order of their importance, water, milk, insects (flies) and air (?). While many high authorities, chiefly English, believe in the aerial transmission, the weight of opinion is against it. But all agree that in an immense majority of cases it is conveyed by contaminated water, or milk infected by such water used in adulterating it, or in washing the cans or the udder of the cow, or by the hands of a not overcleanly milker, who either has a "walking" case of the disease himself, or has infected his hands in nursing a case.

Bearing these principles in mind, I made a personal inspection of the premises, but found nothing that had not already been discovered by the indefatigable President and his assistants. I will give my observations in the inverse order of their importance.

#### THE GROUNDS.

Nothing was found that in any way, in my judgment, could have been in the least instrumental in causing typhoid fever.

The dairy, cow-barn, horse-stables and pig-pens were all in good condition. The last named was too far away to have had any effect, even if its condition had been had.

## THE SEWERAGE AND PLUMBING.

When the first dormitory (brick) was built in 1892, a sewer-pipe was laid, with which was connected one water-closet, which was kept locked and used only in case of sickness, the bath-tubs, the waste-pipe from the kitchen sink and five down-spouts from the roof. In 1895 a new system of sewers was put in and the old sewer abandoned, as was supposed, except as a drainage-pipe for the roof water; but it turns out that the plumbers, when making a connection for the sink of the new kitchen, made it with this, thinking it was the new sewer, which was of the same size—eight inches. When taken up (as has been done, the trench

being disinfected) this old sewer, while very offensive to the nose from the decaying animal and vegetable matter from the kitchen sink, like the old-fashioned dunghill at the back window of many a country kitchen, was said to have been tight and well scoured. It showed, however, one defect which should be mentioned in this discussion, namely, a small opening at the top, due to a bad joint, in the space under the the butler's pantry adjacent to the butter-room.

The new sewers, as far as examined, were in good condition, except the stoppage of one near the President's house, about one hundred yards below the Teague house, by the roots of a tree—an accident which is said to be practically unavoidable. This had been remedied at the time of my visit.

### THE PLUMBING.

While mended plaster and stains on the wall under lavatories, and bath-tubs in some instances, indicated defective work at first, these defects had been remedied, and I should say that the interior plumbing was good. I regret to say that the same cannot be said of all the external plumbing, by which is meant the connections between the house fixtures and the sewer, for one notable exception was found in a leaking soil-pipe connecting ten water-closets on the second floor of the main or brick dormitory with the main sewer. This pipe was not leaking at the time of my visit, for it had been torn out and replaced as soon as the leak was found, but all agree that it was leaking when examined—on the 18th, if I mistake not—and that the adjacent soil was wet. This pipe was 17 feet long. The first five feet from the down pipe being of iron, and the remaining 12 of 6 joints of terra-cotta, which latter section, beginning not quite a foot under the surface of the ground, rapidly descended to the main sewer at a depth of 4 feet. It ran under the butler's pantry or servingroom of the dining-room, the floor of which is about  $2\frac{1}{2}$  feet above the ground, parallel to and 18 inches distant from one wall of a closet under the steps leading from the dining-room to the dormitory above. In this closet, for the lack of any other approximately cool place, the butter was kept-only, however, for a few days at most, after being received from the dairies before being consumed. The cakes of butter, with very rare exceptions, were wrapped in impervious parchment or paraffin paper. In the wall of the butter-closet, adjacent to the soil-pipe, an opening 20 by 42 inches, the bottom being on the floor, which was practically on a level with the ground, had been cut for ventilation. Opposite this opening and in a line across the leaking soil-pipe and the saturated earth, and about 20 feet distant, was the only opening in the foundation wall of that section of the building.

In this discussion of the sewerage, I wish to acknowledge my indebtedness to Colonel A. W. Shaffer, the Sanitary Engineer of the Board of Health, and to Mr. J. L. Ludlow, C. E., of Winston, an ex-engineer of the Board, and now so well and favorably known in that capacity throughout our

State and other Southern States, who was employed by the College to make an inspection.

### FLIES.

Flies convey the germs by walking over the bowel discharges of a typhoid fever case and carrying them on their feet to food in the kitchen or dining-room. I made careful inquiry as to the occurrence of typhoid in the neighborhood of the College. I could learn only of one case, in the person of the night-watchman, who was sick in August. I sent for and questioned him as to the disposal of his dejections, and was informed that they were invariably placed in a hole dug in his garden, disinfected and covered up with earth. Flies did not frequent sewage-wet earth, around the leaking soil-pipe, because it was too dark for them. The fly must be excluded in this instance as a cause. In passing, I should say that there was no possibility of the contamination of the drinking water by this patient.

### THE MILK.

There was no reason to suspect the milk, all of which was obtained from the College dairy, and the fact that only fourteen of thirty-eight patients drank milk when well, and the further fact that not a single case of sickness occurred in four families who bought milk from the College negatives this possible and not infrequently probable source of infection.

## THE DRINKING WATER.

The water supply was obtained from the city water-works and three wells, one at the Teague house, across the street from the College, rented for a dormitory, located within ten feet of the house sewer; one at the wooden dormitory, within twenty feet of one of the main sewers; and one in the open space between the Administration building, the brick dormitory and the dining-room, about 125 feet from the leaking soil-pipe and fully as far from the sewer of the main building. This well is about 40 feet in depth, 15 feet being in earth and the rest in what appeared to be solid rock. Samples from all four of these sources were sent to the State Chemist for analysis by Dr. McIver as soon as the diagnosis of typhoid fever was made, and the analyses were made on the 19th of November. The Chemist pronounced those from the three wells, from the chemical point of view, good drinking water, and that from the city supply bad, owing to the high percentage of albuminoid ammonia, though he stated that it might be due to vegetable contamination—as was doubtless the case, from fallen leaves in the stream furnishing the city water. As soon as I learned that the disease was typhoid fever, I wrote President McIver, suggesting that he write Dr. Anderson at Wilson, the bacteriologist of the Board for the section of the State including Greensboro, for sterilized bottles and have a bacteriological examination of the waters made, as it was much more important than a chemical.

He did so; the bottles came; the samples were taken, packed and carried in person by Professor Joyner to the express office and receipt taken on Friday, November 24th. On Monday morning Dr. McIver telegraphed Dr. Anderson for the result of the examination for the meeting of the Board of Directors that night. He replied that the water had not been received. Inquiries showed that the box had never left the express office at Greensboro. I mention this to explain the delay at which the people were growing impatient, and would add that bacteriological examinations require several days. Other bottles were immediately sterilized, new samples taken and gotten off that night, the express company exerting themselves to hurry them forward.

Dr. Anderson's report has been received. It shows the water of the Teague well and of the central well near the brick dormitory to be infected with intestinal bacilli, and that of the other well and city supply to be free from harmful germs.

#### EXPLANATION.

The general impression, with a reservation as to the bacteriological examination, was that the leaking soil-pipe was the cause of the fever, on the theory that every time the door of the butter-room was opened a draft of air from the outside blew over the sewage-saturated earth through the ventilator opening in the wall, carrying with it the germs and infecting the butter-and possibly other food products in the general store-room, the door of which is ten feet from that of the butter-room and opens on a connecting passage. This condition was unsanitary in the highest degree, and sewer gas in sleeping and living rooms is undoubtedly a cause of disease, but, being extremely skeptical, to say the least, as to the aerial transmission of typhoid fever, I could not accept this theory, though I feared I would be compelled to do so. The cause, whatever it was, was one common to all the residents in the College, either food or drink, partaken of by all, as the sickness was impartially scattered through the three widely separated dormitories. The central well was the only one used by all. Its location, one hundred and twentyfive feet from the nearest sewer, slightly up-hill, and twenty-five or more feet through solid rock, made its infection seem very improbable. But "solid" rock generally has cracks in it, and from somewhere, most probably, of course, the leaking soil-pipe, which may have been leaking for several years—it was put in in 1895—the sewage traveling very slowly, perhaps, and just reaching the well this fall, bacteria, found only in the intestine of man or animal, have gotten into that well. The surroundings exclude animal origin. The specific germ of typhoid fever is close akin to-some say identical with-the ordinary intestinal or colon bacillus, its habitat and habits being much the same; and drinking water contaminated with human sewage, although the bacillus typhosus may not be isolated, which is a difficult thing to do, is regarded as a sufficient

cause for the disease. The objection that the outside students drank of this same water, I would meet by saying that they were in the institution only five or six hours a day, five days in the week; that women proverbially drink very little water—too little for their own good, generally—and that small doses of the poison do not cause the disease always. Then some are more susceptible than others—hardly more than ten per cent. succumbed to full doses.

### CARE OF THE SICK.

I went through the Infirmary and saw the arrangement and management, and I do not hesitate to say that with skilful physicians, trained nurses, good surroundings and an affectionate interest on the part of every one connected with the College, the sick could not be cared for better anywhere.

## THE MANAGEMENT.

In the light of what has occurred, it is easy to say that those in control of the institution are to blame. I think not, any more than we all are, under similar circumstances. As I understand it, the plumbing was let to responsible parties, the contract being for a "first-class" job, and there seems to have been no reason to suspect the leak, for a particular inquiry of the young lady who was in the butter-room every day developed that she had not noticed any odor other than that usually found in all basements. None of us have our wells examined bacteriologically unless there is reason to suspect them. Situated as it is, the contamination of the central well appeared hardly possible. If the management were deserving of criticism in the least it would surely come from the friends of the sick. With a remarkable unanimity they commend it in every respect.

I was particularly requested by the Board of Directors to state in this communication that they had by formal resolution expressed their approval of the action of the Executive Committee and their appreciation of the conduct and work during this trying ordeal of President McIver and the members of the faculty, and their entire confidence in him and them. I was also asked to say that the report of the physicians to the Board was eminently satisfactory. For myself I wish to say that I was more thoroughly convinced than ever of President McIver's eminent fitness for his position, and that I shared the confidence of the Board in the medical attendants.

## CONCLUSION.

The old sewer has been entirely removed, the leaking terra-cotta soilpipe has been replaced with iron, laid in lead-joints, the contaminated earth will all be removed, and the space disinfected and refilled; the wells will all be filled up, and the city water will be safely used, probably sterilized to insure its keeping safe, and every nook and corner of the buildings used by the students will be thoroughly disinfected with bichloride of mercury and formaldehyde gas. In short, everything that science and common sense may suggest will be done, and, in my opinion, residents in the State Normal and Industrial College will hereafter be safer than ever before, and no old student need hesitate to return nor new one to enter for fear of typhoid fever. There is no reason why the great usefulness of this noble institution should be impaired.

### MORAL ON BEHALF OF THE BOARD OF HEALTH.

Every city and town should have an expert inspector of plumbing, and require inspection by him of every job before it is covered up and accepted, and all public institutions and private boarding-schools and other establishments with plumbing should require a similar inspection. Wells near sewers, or any accumulation of filth, especially of human origin, are dangerous. Guard with jealous care the purity of your drinking water.

## SUPPLEMENTARY REPORT.

In order to ascertain if any sewage bacteria had been wafted into the butter-closet from the air above the leaking sewer, sterilized swabs of cotton, after the manner of collecting the bacilli of diphtheria, having been dipped in boiled water, were wiped on the shelf behind the fruit jars in the said closet, on a ledge in the wainscoting near the ventilator opening, on the floor on the side opposite this opening, and in a small, dusty corner near the door, and in sterilized test-tubes were sent to Dr. Anderson and to Dr. A. C. Abbott, the distinguished bacteriologist of Philadelphia. Both reported no sewage bacteria found—as we expected.

Samples from the three wells, a cake of butter from one of the boxes, and a sample of milk were also sent to Dr. Abbott. He reported: for the Teague well, "suspicious organisms"; for the well at the wooden dormitory, "no suspicious organisms were found"; for the central well near the brick dormitory, "organisms belonging to the group of intestinal bacteria were found in this water." It will be noted that both the bacteriologists agreed in finding the Teague and the central wells infected, and the well at the wooden dormitory free from suspicious organisms. Colon bacilli were found in both the milk and butter, but we doubt if any milk from the neatest of ordinary dairies can be found uninfected with the colon bacillus of the cow, which is undistinguishable from that of the human being. But for reasons given in the report above, we are satisfied that the cause of the fever was not in the milk, and no butter is made at the College during the session. It is possible, however, it shoud be said, that some of the butter might have been infected at one of the various dairies from which it was obtained by infected water used in washing it. There is no evidence of this to date. The specific bacillus

typhosus was not found by either bacteriologist in any specimen, which, however, does not prove by any means that it was not present in the water. We learn from one of the highest authorities on the subject, of very large experience in examinations of drinking water, that he has never succeeded in isolating that bacterium in water.

The "weak spot" in our theory that the infected water of the central well was the cause of the typhoid fever was, we then supposed to be the fact, that the outside students, none of whom were sick, also drank of this water from the coolers in the main building. Subsequent inquiry, however, has developed the fact that such was not the case. During the vacation the two or three officials remaining at work in their offices in the main building, thinking it best not to use water from a well not used by any one else, ordered the janitor to get their drinking water elsewhere, and he thenceforth obtained it from the "mineral spring" and the well at the wooden dormitory, which was in daily use, and which, it will be remembered, was not infected. After the opening of the session he continued, without being told, to get the drinking water for the main building, it turns out, from the same pure sources, although the central well had been cleaned out. So the outside students did not drink of the water of the central well. This practically settles the question, to our mind, as to the origin of the disease. Upon making special inquiry, we learned that at the very beginning of the sessions of 1896 and 1895, there were respectively in the brick dormitory, whose water-closets emptied into the leaking sewer, one and two cases of typhoid fever, so that if the leaking sewer was the source of contamination, as is most probable, there being no other possible source yet discovered, and if the typhoid bacilli could live so long in the sewer, the specific infection at the central well is clear.

In regard to the nature of the fever or fevers, the opinion has been expressed to us by three physicians whose opinions have weight with us, that all the cases were due to the typhoid poison. We appreciate the force of their reasoning, although we are by no means convinced. But as the physicians in attendance upon the sick will shortly make a full report, we postpone discussion of this question further until that is published. It is a very interesting question.

# AGRICULTURAL AND MECHANICAL COLLEGE FOR WHITES, AT RALEIGH.

Dr. George G. Thomas,

President North Carolina State Board of Health.

DEAR SIR:—We have inspected, as ordered, the Agricultural and Mechanical College at Raleigh, and respectfully report:

Our inspection of this institution showed it to be generally in good condition, but we think the sanitation of the premises would be improved by:

The substitution of water-closets for the surface privy in rear of boiler-house:

The moving of the long privy further down the hill, as recommended in a former report;

The disinfection and filling up of the old abandoned cess-pool near the barn:

The exclusion of animals from the bottom below the barn in which the bored wells furnishing the water supply are situated;

The filling up of the well in front of the boiler-house, should a second bacteriological examination show the continued presence of intestinal bacilli already found therein, and use of water from the bored wells only. Should further investigation, however, demonstrate the purity of this water, and it be desirable to resume its use, we would recommend that the chain and bucket be discarded, as the well could be easily infected by the soiled hands of any one drawing water, and that the top of the well be covered and a pump installed.

RICHARD H. LEWIS, M. D., A. W. SHAFFER, S. E.,

Committee.

# AGRICULTURAL AND MECHANICAL COLLEGE FOR THE COLORED RACE, AT GREENSBORO.

DR. GEORGE G. THOMAS,

President North Carolina Board of Health.

DEAR SIR:—Having concluded our inspection of the Normal on Tuesday morning, we repaired to the A. and M. College for the Colored Race, situated in the northeast quarter of Greensboro. We found clean grounds; rather imposing brick buildings with low ceilings and cracked walls; a well of hard water and city connection; the mouth of the sewer in a very small stream barely two hundred feet from the campus; an excellent diagram of the grounds, buildings and underground drainage made by the Engineering class; about — students in a complacent state of uninterrupted health, and a resident physician bewailing the noxious desuetude of a doctor without a patient.

The dormitory is full, but not overflowing, as at the Normal, but it is up to its normal capacity, and a slight increase of non-resident students will produce crowding.

We are of the opinion that the mouth of the sewer is too near the building; but it is within about thirty feet of the north line of the property, beyond which it cannot be extended without the consent of the adjacent owner. The little branch, after crossing the line, is overgrown with grass, weeds, briers, shrubs and trees, through which the sewage is filtered, leaving the residue suspended along the banks and the odors

floating in the air. This north boundary line and sewer should be extended at least five hundred feet northward down the stream and the stream should be straightened, deepened and the banks cleared up, as above the mouth of the sewer.

All of which is respectfully submitted.

HENRY H. DODSON, M. D., A. W. SHAFFER, S. E.

November 24, 1899.

Committee.

# SCHOOLS FOR THE DEAF AND DUMB AND THE BLIND AT RALEIGH.

DR. GEORGE G. THOMAS,

President North Carolina Board of Health.

DEAR SIR:—According to instructions, we have made inspections of the Schools for the Deaf and Dumb and the Blind at Raleigh, and respectfully beg leave to report as follows:

#### SCHOOL FOR THE WHITE BLIND.

We were very favorably impressed with the cleanliness and neatness of the corridors and dormitories, particularly in view of the character of the inmates—afflicted children. We found, however, several matters demanding attention, as set forth below.

## GIRLS' BUILDING.

The lavatories, consisting of wash basins, bath-tubs and water-closets on the second floor of both the north and south wings, were not in use, and the soil-pipe of the teachers' closet on second floor was choked. The corresponding conveniences on the third floor seemed, so far as the plumbing is concerned, to be in good condition. Upon inquiry, we. learned that the plumbing on the second floor was old and that the closets leaked when the water was turned on. The work on the third floor was new and up-to-date, that story having been added recently. The choking of the soil-pipe of the teachers' closet had just occurred. While we noted a lack of facilities for ventilating all these apartments, we beg to call particular attention to the water-closets on the third floor. The closets themselves are excellent, but both the battery of seats for the pupils and the single one for the teachers are located in small rooms with no opening whatever for ventilation or light except the door of entrance. The servants' closets for both male and female on the ground floor are of the same character as to light and ventilation-or the want of them. In no part of an inhabited house is the demand for both fresh

air and light—the natural enemies of disease germs—so urgent as in these particular quarters.

In discussing the plumbing with Principal'Ray, we were told of certain conditions which in our judgment are a serious menace to the health of the institution. The facts of the case are as follows: When sanitary conveniences were first installed there was no general city sewerage system, so that the school had to provide its own private sewer. The soilpipes from the water-closets in the two wings descended on the rear side of the building, and the sewers receiving them were united at a manhole in front of the building, and the first part of their course therefore was across and under the floor of the basement, in which are situated the dining-room, store-room, etc. When the city sewerage system was put in the connections were transferred to that and the old sewer was - abandoned as a sewer, but continued as a drainage pipe into which the down spouts from the roof emptied. The sections of sewer-pipe, running under the basement were cut across flush with the inner surface of the walls and removed and the open ends in the walls plugged with cement. After this was done, according to the testimony of one of the employees, on the occasion of a heavy rain, the water could not be carried off fast enough, and the back-water forced out the cement plugs and flooded the basement, the dining-room being "knee-deep" in water of the foulest description.

This building being an old one, was constructed without any view whatever apparently to ventilation. It is heated by direct steam radiation, and there is no arrangement for the proper change of the air. The best sanitary authorities hold that a child should have 2,500 cubic feet of fresh air per hour, so that if only 600 cubic feet is allowed to each child, the air should be completely changed four times in that period. As arranged, the fresh air that can get into the building must sneak in through the cracks and the outside doors when opened. In most of the rooms on the old second floor there are open fire-places, and in each room on the old third floor there is a ventilating flue, but they cannot perform their function of taking out the foul air unless a sufficient volume of fresh air is admitted to make a current and insure circulation. It is true that the ventilation can be improved by opening the windows, but in cold weather the draught therefrom is sometimes dangerous, and it is practically impossible to keep them open or properly regulate them.

We regard this want of ventilation as a very serious matter, the more so because its effects are experienced by not only growing children but afflicted children. The vital processes of the animal economy may be fitly compared to the steam-generating boiler. The stronger the draught, the more oxygen supplied in other words, the hotter the fire and the more rapid the development of steam or power. In the animal the food represents the fuel, the respiration the draught, and vital force the steam; therefore, the better the food the deeper and more frequent the res-

pirations, the greater the vital force. In growing children, as there must be a surplus balance—something beyond merely holding one's own—these changes are more active than in the mature. They eat more than adults in proportion to weight, and by their incessant activity they keep on a large part of the time what might be called a forced draught, and as a consequence the vital fires burn bright. But blind children are debarred by their infirmity from taking much active exercise, they cannot force the draught, and consequently it is all-important that they should have the purest air in the greatest abundance.

In view of the above, we would respectfully recommend:

- 1. That the plumbing be thoroughly overhauled and put in first-class order.
  - 2. That all water-closets be both ventilated and lighted.
- 3. That the old abandoned sewer immediately adjacent to the building be removed and the soil disinfected, and that the present inferior wooden floors of the dining and store-rooms be replaced with cement of good quality, properly laid.
- 4. That the general ventilation of the whole building be improved. We believe that this can be done at comparatively small cost by substituting direct-indirect radiators connecting with the outer air for the present direct radiators, the opening of all transoms over inside doors and the provision of an outlet flue in every room of sufficient size.

### BOYS' BUILDING.

We were much pleased with this handsome new building as to construction, arrangement, lighting, heating and ventilation. The system employed for the two last named, what is known as the fan or propulsion system, in which fresh air from outside is driven by a fan through a steam coil, and thence, having been warmed, through conductors to every room, the foul air being forced out through ventilating flues opening near the floor, is, in our opinion, the very best yet devised. The only thing we found to criticise was a decided fecal odor in the water-closet on the second floor, the cause of which should be ascertained and removed.

The new water supply from the deep-bored well ought theoretically to be perfectly safe. We learn, however, from the analysis of the State Chemist that the proportion of organic matter is too high. Its origin is obscure. If it comes from the surface it may be dangerous. While the immediately surrounding soil is too low, and it is a fact that deep wells can be polluted by drainage trickling down the outside of the pipe, we do not believe that the water has been contaminated from that source. We would, however, advise that as soon as the brick house now in process of construction around it is finished, earth be banked against the walls to a sufficient height to give surface drainage away from it in every direction. We would also recommend that the brick floor of the laundry,

about 20 feet distant from the well, the cemented surface of which is cracked and worn off in places, be re-cemented to prevent seepage through it of the slops.

## SCHOOL FOR THE DEAF AND DUMB AND THE BLIND-COLORED.

### GIRLS' BUILDING.

As in the case of the school for the white blind, we found the general conditions as to cleanliness and neatness of corridors and dormitories good.

The plumbing, with the exception of the sink on the ground floor, we found sufficient and in good order, but the heating and ventilation could, we think, be much improved. The heating is done by direct steam radiators in the corridors, and there is no arrangement for taking out the foul air, the numerous open fire-places scattered through the building, which would answer admirably for this purpose, having in several instances been closed up entirely and in others nearly so, a very small and inadequate opening being left.

Two cases of typhoid fever have occurred in this building during the current session. The regular water supply is from the city mains, but the children have access to wells in the vicinity.

We were informed that a condition very similar to that obtaining at the white institution, in the matter of abandoned sewers running under the house, exists here also.

We would recommend:

That the old sewers be removed and their channels disinfected before refilling;

That all fire-places be opened to their full extent at once;

That direct-indirect radiators connecting with the outer air be substituted for the direct now in use, as soon as practicable, but that such a radiator be immediately installed in the sick-room;

That the water supply, including wells in the vicinity, be analyzed chemically and bacteriologically.

## BOYS' BUILDING.

This is a new building, well planned, but not so well built apparently, as large cracks show in the walls at the southern end, suggesting a bad foundation there.

The lavatory facilities are excellent and in good order.

Each room is provided with a transom over the door and a ventilating shaft, but as the building is heated by direct radiation, the circulation of air must be feeble and insufficient.

We would recommend the adoption, as soon as practicable, of the direct-indirect system of heating and the entire removal of all transom sashes so that they cannot be closed.

We were extended every courtesy and facility at both institutions, and the general impression left upon our minds was that they were well managed.

A. W. Shaffer, S. E., Richard H. Lewis, M. D., Committee,

## SCHOOL FOR THE DEAF AND DUMB, AT MORGANTON.

THE HONORABLE BOARD OF DIRECTORS,

State School for the Deaf and Dumb, Morganton, N. C.

GENTLEMEN:—In compliance with section 2 of an Act in Relation to the Board of Health, we have made an inspection of your institution.

We are pleased to report that with the exception of one of the waterclosets in the basement, the surroundings of which were more unsightly than positively unsanitary, we found nothing deserving of criticism from the hygienic point of view.

We were impressed with the possible horrors that might ensue upon a fire in the main building, which includes the dormitories, and we would most earnestly advise the provision at the earliest possible time of adequate fire-escapes.

We beg to acknowledge the courteons treatment received from the officials, and to congratulate you and the State on the erection of the beautiful new Administration building.

Respectfully yours,

George Gillett Thomas, M. D., Richard H. Lewis, M. D.,

Committee.

### THE PENITENTIARY.

DR. GEORGE G. THOMAS,

President North Carolina Board of Health.

DEAR SIR:—In obedience to instructions, the undersigned have made an inspection of the Penitentiary, and respectfully beg leave to report:

Conducted by Warden Green, we made an inspection of all departments of the State's Prison, and are glad to report the sanitary conditions in general to be very good. We should say, however, that the rear part of the enclosure, while showing nothing really dangerous to health, did not present the neat and orderly appearance to be expected in such an institution, being more or less littered up in various ways.

The cells we found to be well kept and supplied with everything needful, including metal buckets for night-soil instead of the absorbent wooden ones at one time in use. The air space is ample and the ventilation good, there being a ventilating shaft from every cell. The large chamber, in the centre of which the cells are placed, is heated by steam. We regret that we cannot bestow equal commendation on the heating and ventilation of the hospital. The present arrangement, which consists of a cast-iron hard coal stove in each ward for heating, and for ventilation outlet flues, but no inlets except windows, is bad. In summer windows would answer every purpose, but in cold weather they are almost sure to be kept closed. The ventilating arrangement should always be automatic, and as there is already a steam-heating plant in use in most parts of the prison, the solution of the problem under discussion is simple and relatively, when we take into consideration the coal necessary for the stoves, inexpensive. We would recommend the extension of the steam-pipes and the installation in the hospital wards of direct-indirect radiators with the necessary air-ducts connected with the open air. By this means pure fresh warm air would be poured in through the radiators, and the foul air would be forced out the vents already provided. Of all people, the sick require the purest air and the most of it. Their vital fires, so to speak, are burning low, and an abundance of fuel—oxygen—is required. Simple humanity demands that it be supplied, and we hope that the management will see that it is promptly done. The very low death rate during the past year—only three from disease (tuberculosis 2, meningitis 1) in an average population of 300 is not a sufficient reason for letting the present arrangement stand, because there is no telling when the wards may be crowded, when the deleterious effects would be shown.

In this connection we cordially endorse the recommendation by the attending physician, Dr. Tucker, that a separate ward be set apart for tuberculous patients. The infectious character of tuberculosis is now thoroughly established, and the lives of patients sick from other diseases should not be endangered by compulsory intimate association with them.

The water supply for drinking—a large well on the grounds, and not exposed to contamination—is excellent, and for general purposes a reservoir of spring water in the old rock quarry abundant. As a practical proof of the first statement there was only one case of typhoid fever during the year, and that was clearly imported, as the woman was attacked within two weeks of her admission. She recovered.

The sewage is emptied just outside the western wall into an open cemented trough of very rapid fall, which carries it to Rocky Branch. This is an excellent arrangement so far as the prison is concerned.

The convicts generally seemed to be well nourished and in good physical condition.

RICHARD H. LEWIS, M. D., A. W. SHAFFER, S. E.,

Committee.

#### STATE CONVICT FARM.

RALEIGH, N. C., December 29, 1900.

DR. GEORGE G. THOMAS,

President State Board of Health.

Doctor:—In obedience to your direction, I visited the State Farms in Halifax county, N. C., known as Calèdonia, Nos. 1, 2 and 3, to make the biennial inspection required by law, with Dr. Henry W. Lewis, of Jackson, N. C. I reached the farms on the night of December 27th, made the inspection December 28th, and reached home December 29th. Dr. Lewis came down to the river on the morning of the 28th and found the ferry-boat lodged in the mud away from the bank, where it could not be reached or moved with any available force, and after remaining there until about 3 p. m., returned home, and I made the inspection without his assistance, but cordially supported by Messrs. C. J. Rhem, in charge of Camp No. 2, J. H. McIver, in charge of Camp No. 1, and the second in command of Camp No. 3, in charge of C. N. Christian, who was absent. And of said inspection I have the honor to report as follows:

No. 2, Captain C. J. Rhem, ninety-two convicts, confined within a stockade at night, covering an area of about four acres. The sleeping dormitories, 30 x 75 feet, 12 feet pitch, ceiled overhead and roofed with tin. In each of these dormitories were sixty double bunks, in barrack form, heated with two stoves, lighted by twelve windows, ventilated through centre of ceiling and apex of roof, only one dormitory in use. Dining-room, 30 x 90 feet, 12 feet pitch. Seats and narrow plank tables to full capacity of convicts, and two small plain closets. Light and ventilation as in dormitories.

Hospital, 30 x 42, lighted and ventilated as dormitories, one drug-room inclosed, one dispensing closet. Eight beds, wooden frame and slats, mattresses made on the grounds. Patients, two, one suffering from malaria, the other from a cut. Four have died during the past two years, two in 1899 and two in 1900.

The laundry is 10 x 15 feet. The cook-room, 17 x 35 feet, contains a large iron boiler, oven and stove, in and on which the food of the convicts and patients in hospital is prepared. The building is rough and the oven needs repairs. I have seen cleaner places, but the food was of good quality and seemed to be well prepared. The quartermaster and commissary occupy the same room, 24 x 30 feet, adjoining the kitchen.

The wash-room and bath-room are consolidated, 24 x 30 feet. Three large iron kettles are used to heat water for both purposes; a dozen tubs or half barrels are used for bathing on Sundays, in which all are required to participate, and new convicts immediately upon their arrival upon the grounds.

The dairy, very crude, is 10 x 12 feet. The smoke-house is 14 x 20 feet, and the work-shop 14 x 34 feet.

Water is supplied from four deep wells in and about the premises, raised by hand-lift pumps, of which the water (superficially) is good. Ice-houses they have; but no ice last year, and little prospect for the coming year, save that which is obtained from a distance for hospital and official use.

The closets throughout the buildings are plain, iron hopper pattern, rinsed out and limed after use, and they empty into wooden tubs upon the ground beneath, which are emptied every morning. The rooms of the overseers and guards, one to each class, are small, ceiled and have fire-places, but the furniture is certainly not creditable. They sleep on wooden frame bunks and slats of the most ancient and primitive character, where vermin, once established, can never be eradicated without persistent labor and attention which ought not to be expected of men who have spent the day in no easy duty upon the field.

No. 1, Captain J. H. McIver, has one hundred convicts, and is almost identical in detail with No. 2. The hospital has a better building, and I found it cleaner and somewhat better kept. There was but one patient, suffering from malaria, and none had died during the two years last past. This one building alone was furnished with iron beds and spring mattresses. The wash and bath-room had no floor, only a narrow plank platform on which the convicts took their Sunday baths.

No. 3, Captain C. N. Christian, has 95 convicts. The buildings are less in number, smaller, and not in so good condition as Nos. 1 and 2. The hospital had one patient, suffering from some affection of the heart. None had been lost during the present year, and in the absence of Captain Christian, I was unable to ascertain the mortality of last year.

The quarters of overseers and guards were smaller and in worse condition, from overcrowding and dilapidation, than Nos. 1 and 2. Otherwise there was little to be said of a comparative nature between them. I was informed that No. 3 is operated under a lease which has but one more year to run, and that its renewal is not contemplated; that the Northampton farm across the river is now undergoing surrender and abandonment, and Nos. 1 and 2 have been purchased, and are now the property of the State. These facts seem to make further remarks respecting No. 3 and the Northampton farm unnecessary, while the permanent character of Nos. 1 and 2 command the best counsel of wisdom and experience for their prosperity and success.

Speaking only from the stand-point of sanitation, I would respectfully suggest the following improvement on Nos. 1 and 2, in the order of their importance:

1st. That a wind-mill be erected at each of these two camps, with tank of suitable dimensions to hold, say a week's supply of water, together with the necessary water supply pipes, plumbing and sewerage. As all the buildings are one story, the tank could be built of brick, raising the floor ten (10) feet above the ground, and the brick could be made on the farm.

2d. Change all beds in Hospital No. 2, and overseer and guard-rooms of both camps from wooden bunks and slats to iron frame and spring mattresses.

3d. Plant a grove—8 to 10 acres—of forest trees at each camp to modify the intense heat of the summer sun. The trees adapted to that locality are numerous, and among them are the sugar and Norway maples, the white, the water and the willow oak, the persimmon and black walnut, and best and choicest of all, the great Columbian pecan, whose nuts command the highest price of any nuts known to commerce. The trees should be set from 30 to 50 feet apart, according to their habits, requiring from 16 to 49 trees to the acre. All except the pecan can be obtained from the nurseries of the country at twenty-five to fifty cents each, and the grafted pecan of the specific variety named from the nurseries of the Gulf States at \$1.50 each, in quantity.

All of which is respectfully submitted.

A. W. Shaffer, Sanitary Engineer State Board of Health.

WILMINGTON, N. C., December 27, 1900.

BOARD OF DIRECTORS STATE PENITENTIARY.

GENTLEMEN:—In accordance with the instructions of the Board of Health, I visited the State farm near Wadesboro, and beg leave to report that it had a satisfactory air of cleanliness, and as much comfort as the buildings could afford.

The barracks were amply sufficient in air space for the number of convicts, amounting at my visit to thirty-five, and would provide for the safe accommodation of double that number. The latrine in the end of the barracks was carefully cleaned, and had been freshly limed for use at night. The air in the building was wholesome and the prisoners were clean. Sewage matter accumulating in the tubs under the corner of the barracks at night and under the closets in the yard during the day is carried each day to a ditch an eighth of a mile from the prison yard and emptied. The ditch carries the matter to a neighboring creek, and is thoroughly cleansed by rains, the fall of the creek providing for its efficient flushing. The food supplies seemed ample, were clean and of good quality.

I found three wells on the premises; one behind the laundry—an old-fashioned one with wooden curbing—from which I was assured that only water for washing was drawn; another in the yard of the enclosure had been dug down through a layer of rock to a depth of forty-six feet and curbed with 24-inch terra cotta-pipe, the space on the outside of the pipe being closely packed with sand and loose stone. This well was dug with the idea of use for the barracks, but the prisoners disliked it, and the

Superintendent had returned to the well in front of the yard, several hundred yards from any source of contamination, yielding an apparently safe supply. This water, I was informed, was used entirely for drinking and cooking.

There had been very little sickness in the station, and none of any serious character, except a case of sun-stroke last summer. The room set aside for the hospital was quite comfortable and very clean. I respectfully submit that the healthfulness of this station is well assured, and the care of the inmates is in good keeping.

I wish to acknowledge the prompt attention of the Superintendent, Mr. Wall, and his Steward, Mr. McMillan, and their courtesy to your reporter during his visit; with this to their credit, that my visit was entirely unexpected, and I found matters as I should suppose they would be every day.

Yours very truly,

George Gillett Thomas, M. D., For Board of Health of North Carolina.

His Excellency, D. L. Russell, Governor of North Carolina.

SIR:—We, the undersigned, a committee of the State Board of Health, in compliance with your request and acting under section 3 of the Act in Relation to the Board of Health, chapter 214, Laws of 1893, on Wednesday, the 27th inst., made a careful sanitary inspection of the late convict camp at Castle Hayne, and respectfully beg leave to report as follows:

Our observations covered the barracks or quarters of the convicts, the arrangements for disposing of the night-soil, the water supply and the condition of the phosphate mine, and we will take them up in the order given.

The Barracks: The quarters for the convicts are all assembled in one wooden building with walls of one plank in thickness, the cracks being broken with strips, covered with tin and consist of one dormitory or "cell" 30 x 46 x 12 feet, with an open roof having a large latticed ventilator on the comb, a similar but smaller room for use as a hospital for the sick, and between the two a kitchen and dining-room, or mess-hall. In the cell are two rows of double bunks two tiers high, thirty-eight in number, affording sleeping accommodations for seventy-six men. We were informed that for a short while as many as one hundred and twenty-five had been lodged therein by means of another row of bunks down the centre of the room.

The chimney of the bake-oven of terra-cotta pipe we found very badly cracked.

The sanitary arrangement for use at night consisted of a single stool at one end of the cell, opening through the floor and emptying into a tub placed on the ground beneath. The accommodations were the same in this respect in the hospital.

The Water Supply: Seventy-five feet from the tub under the cell and a less distance from that under the hospital is a well about eighteen feet in depth down to the rock with a square curbing of plank more or less decayed. We were told that a hole had been drilled into the rock six or eight feet, but that it was filled up. We were also informed that at one time for several months water for the prisoners was obtained from another well in a grove two or three hundred yards distant. We did not inspect this well, but accepted without dispute the statement that it was a better well than the one in the yard.

In a room adjacent to the shingle-roofed house occupied by the officials of the camp we found what appeared to be an excellent cistern of about three hundred and fifty barrels capacity, it was said, with the guttering of the house arranged to deliver the roof-water to the filter and thence to the cistern. It was full of water at the time of our visit, and therefore, we assume, free from cracks. Upon inquiry, we learned that it had not been utilized for drinking purposes, owing, it was suggested, to a prejudice against the water caused by finding in it certain unsavory objects, including a dead cat, which lost its life through the carelessness of some one in leaving the top off, and, in all probability, we would add, to a want of appreciation on the part of the local management of the great superiority in that locality of cistern to well water.

The Phosphate Mine: This is a wide pit with walls averaging, we would say, about 25 feet on the high side and 10 on the low side. It is located quite near the bank of the creek which runs by the place, the lowest level at which the phosphate is found being well above the water-level of the creek. Leading from this pit, with ample fall to drain its bottom into the creek, is an open ditch. Although partially filled up since the stoppage of work, there was still not enough water standing to prevent our walking all over the bottom. We found in the mine, mounted on a small flat-car, a steam-pump and boiler, which it had been found necessary to use only once, we were told, to pump the water from a pocket of phosphate below the general level. There is no reason why diggers of phosphate there should work in water.

Recommendations: 1. That the number of occupants of the cell be restricted to a maximum of sixty, a number out of proportion to the size of the room, but owing to the exceptional ventilation admissible. That a box containing dry earth and a shingle be placed by the side of the stool and prisoners required to cover each evacuation with dry earth. That a water-tight tub of not less than 20 gallons capacity be kept under the stool and emptied every day. That the cracked terra-cotta be replaced with a brick flue as a protection against fire.

2. That the well be immediately filled up. That the cistern be thoroughly cleaned and the filter refilled in accordance with the directions given in the health pamphlet on Drinking Water and Malarial Diseases, copy of which accompanies this report. That the water from the tin

roof of the barracks be utilized for the cistern. And to insure an abundance of good water for all purposes under all circumstances, that a bored well be sunk at some suitable point.

3. That the ditch draining the phosphate mine be opened and kept open to a depth sufficient to take off promptly all water therefrom.

Conclusions: Upon looking over the Penitentiary reports we find that the total number of deaths since convicts were first sent to Castle Hayne in 1892 is 25, of which number 8 were assigned to malarial fever, five of those having died in 1898. These were the only deaths that could be rightly attributed to any intrinsic local influence. That some, if not all of them, might have been prevented by proper care, is suggested by the experience of Mr. Sharon, a white man, who went there nine years ago direct from the hill country of Warren county, and who, although peculiarly susceptible to malaria on that account, has not been sick a day. He has drunk cistern water from his home just across the creek.

A small dose of quinine daily is an almost certain preventive of malarial attacks, and we would respectfully suggest its use in all malarial camps during the months of August and September.

With a pure water supply, reasonable attention to the collection and removal of the night-soil and proper care of the prisoners in a general way, we see no reason why work in the wide, shallow phosphate pit, lying open to the sun and air, should not be as free from danger as any other kind of labor in the eastern section of the State.

Respectfully yours,

GEORGE GILLETT THOMAS, M. D., RICHARD H. LEWIS, M. D.,

December 29, 1899.

Committee.

# SOLDIERS' HOME.

Dr. George C. Thomas,

President State Board of Health.

DEAR SIR:—In obedience to instructions, we have made an inspection of the Soldiers' Home, and respectfully beg leave to report:

The buildings at this institution are of wood and rather rough in appearance, but seem very well adapted to the purpose for which they are used. The dormitories, consisting for the most part of rooms large enough for two, are supplied with open fire-places for wood, and while very plainly furnished, are suggestive of comfort.

The old hospital building deserved to be replaced by the new one, which, while finished, is not yet occupied for lack of certain delayed furnishings. We were very much pleased with this building, for although not heated and ventilated according to the modern hospital ideal—a very expensive ideal, unfortunately—each ward has an open fire-place as well as a separate flue for stove, and there will be no practical trouble

on that score. The internal arrangement is rather unique and decidedly pleasing, the large triangular "sun-parlor" being a feature. Each of the four wards is supplied with white enameled brass-tipped iron bedsteads, with good mattresses on woven wire springs, and has its own complete sanitary conveniences of excellent pattern, the water supply being pumped from a well in the grounds by a gasoline engine. In this connection we would suggest that as a water supply and sewerage has been provided for the hospital, it would be well to supersede the present surface privy for general use with modern water-closets, for although the former is well kept it is out of date.

The kitchen and dining-room were very neat and clean, and would put to the blush those of many pretentious private establishments.

The stables, pig-pens and grounds generally were all in good order, and the impression we brought away was, that with the facilities at hand, a great deal was accomplished in a very excellent manner.

A. W. Shaffer, S. E., Richard H. Lewis, M. D., Committee.

## OXFORD ORPHAN ASYLUM.

RALEIGH, N. C., October 25, 1900.

DR. GEORGE G. THOMAS,

President, etc.

DEAR SIR:—I passed through Oxford, on my tour of inspection and sampling of municipal waters, September 20th, and took that opportunity to make a general inspection of the Orphan Asylum at that place, which had been ordered by the Board of Health, and I think it proper to make a separate report thereon, as follows:

Reaching the Asylum early in the morning, I found Miss Nettie Beamis, Lady Principal, in charge, Colonel Hicks, the Superintendent, being absent in town. He came in a few moments thereafter, and with these two and plenty of time on my hands, we visited the study and recitation-rooms, the chapel, sleeping-rooms and closets, printing-office and paper store-rooms, some of the outside dormitories, the hospital, garden, farm and campus, pumping station and water-tank, and about 210 pupils—in fact, about everything on the grounds, except the mechanical department, which is located out on the borders of the town, like a pest-house, and train time was at hand when I was ready to visit it.

Critically speaking, I found the official residence of the Superintendent away down the hill, nearly out of sight and entirely beyond hearing of the campus and in the vicinity of the hospital, where neither ought to be; the printing-office and paper store-room in the Administration building, where they ought not to be; the water-tank leaking badly, in the

teeth of a water famine, and the ground beneath the great oaks of the campus swept and garnished, while the trees were famishing for leaf-mulch, moisture and food.

Truthfully and justly speaking, I found the buildings and grounds absolutely free from that bane of public institutions—visible vermin and filth; the neatest dressed, cleanest and most orderly children and the best kept and cleanest rooms, furniture, beds, clothing, food, kitchen, closets, store-rooms, grounds and buildings which I have encountered, officially or otherwise, in a public institution of this character anywhere.

I did not tarry to determine whose was the master-hand, or whether two were joined in the "Master's Grip," to so conduct and manage this loving duty to the memory of those who fell in "battle's magnificently stern array," but I did learn that it is an institution of which the noble Order that originated and maintains it, the people of the State who, through their Legislature, contribute to it, and the children and friends of the children who are its beneficiaries, may well be proud.

I am very respectfully,

A. W. Shaffer, Sanitary Engineer.

# MUNICIPAL WATER SUPPLIES.

Since our last report there has been a gratifying advance on this line of sanitary improvement, no less than eight towns having installed water-works in that time—a gain of fifty per cent. It shows that our people are becoming more and more alive to the importance of pure water in abundance.

The proposed Act to Protect Water Supplies, which was printed in the last report, was enacted by the General Assembly of 1899, although in a somewhat emasculated Taken, however, together with the sections in the Act in Relation to the Board of Health bearing on the subject, legislation is perhaps sufficient to enable municipalities to protect their supplies if they desire to do so. is to be regretted, however, that with two or three honorable exceptions the municipal authorities have not so far shown any special disposition to avail themselves of the powers conferred upon them by the law to this end. But the vast majority of our people obtain their drinking water from wells and springs and cannot therefore be benefited by this legislation. Until quite recently they have been entirely unprotected, owing to the insufficiency of the appropriation made to the Board of Health, but the Board of Agriculture, at its meeting in December, 1900, made provision for the bacteriological examination of such waters when suspected of causing disease, and it is confidently believed that much sickness and many deaths from typhoid fever will be saved by this enlightened action on their part. A more detailed statement of this matter will be found in the appended extract from the monthly BULLETIN, entitled "Another Advance in Sanitation in North Carolina"

The regular biennial inspection of the public water supplies of the State was made by the Engineer of the Board, and the following is his report:

REPORT OF COLONEL A. W. SHAFFER, ENGINEER OF THE BOARD.

RALEIGH, N. C., December 1, 1900.

Dr. George G. Thomas,

President State Board of Health.

SIR:—I have the honor to submit herewith my report of my second biennial tour of inspection and sampling of municipal waters of the State, made in conformity with law, under direction of the Board.

I visited the following cities in the order named, to-wit: Raleigh, Durham, Oxford, Henderson, Tarboro, Rocky Mount, Wilson, Goldsboro, Greensboro, Reidsville, Winston-Salem, Asheville, Statesville, Salisbury, Concord, Gastonia, Charlotte, Monroe, Sanford, New Bern, Wilmington, Fayetteville, Lumberton, total 24. Of these, Tarboro, Rocky Mount, Reidsville, Statesville, Gastonia, Monroe, Sanford and Lumberton have been established since last report, and Oxford was visited only for the inspection of the Orphan Asylum, of which you have separate report. I speak of those works which were in existence two years ago, and were fully reported upon, only with respect to the changes, modifications and improvements observed.

### LUMBERTON.

Water from eight deep-flowing wells, located about the city, the finest at the old Fair Grounds, about a mile from town, but now abandoned. This magnificent well, flowing 80 to 100 gallons a minute, is allowed to go to waste in the face of the fact that the other wells are slowly diminishing in flow. What a munificence of profligacy and waste! It belongs to the town and has never been analyzed. Samples No. 17, from the large flowing well at the station house. Odor and taste of sulphur. No sewerage.

Chemical Analysis.

Total solid matter in solution and suspension	8.5	gr. per U. S. gal.
Hardness	6.85	deg. Clarke's sc.
Equivalent to calcium carbonate	5.85	gr. per U. S. gal.
Chlorine	.40	gr. per U. S. gal.
Free ammonia	.0232	parts per mil.
Albuminoid ammonia	.0790	parts per mil.

Bacteriological Analysis by Dr. Pate.

No. of sample, 17; source, Lumberton; date, November 24, 1900; sterile.

Thinking there must have been some mistake somewhere, being extremely skeptical as to sterile natural waters, we ordered another examination. The following is Dr. Pate's report. We congratulate Lumberton:

Gibson, N. C., January 9, 1901.

Dr. R. H. Lewis, Raleigh, N. C.

Dear Doctor:—At your request, January 2d, I sterilized a bottle, first by steam then by dry heat, and expressed it to the mayor of Lumberton, with a request that he send me a second sample of water from the same source that Colonel Shaffer collected the first sample. The mayor responded promptly. The water was placed on culture media about five hours after sample was taken. Bouillon, gelatine and milk prepared by myself. Glycerinized agar, lactose, litmus agar and Elsner's prepared at the laboratory of Parke, Davis & Co.

After five days' exposure, glycerinized agar at 41°, the other media at room temperature remains sterile, except three moulds on agar and two colonies of micrococci on gelatine, which I think accidental.

I report a second time the sample of water from this source, viz.: artesian well No. 3, Lumberton, is practically sterile.

Yours very truly,

W. T. PATE.

#### SANFORD.

Deep well water. No sewerage system. Plant in a small brick building. An old pump and engine, chronically indisposed, not more than half the requisite power. An ill-constructed and ill-kept reservoir adjoining. All built primarily for railroad supply. Water samples No. 15, taken from pump in engine-house, has never been analyzed.

### Chemical Analysis.

Total solid matter in solution and suspension	14.7	gr. pe	r U.	S. gal.
Hardnesss	4.60	deg. (	llarl	ke's sc.
Equivalent to calcium carbonate	3.60	gr. pe	rU.	S. gal.
Chlorine	1.35	gr. pe	r U.	S. gal.
Free ammonia	.8877	parts	per	mil.
Albuminoid ammonia				
Nitrogen as nitrates		"		
Nitrogen as nitrites	1.000	4.6	44	6.6

# Bacteriological Analysis by Dr. Pate.

No. of sample, 15; source, Sanford; date, October 10, 1900; number of bacteria per C. C., 600; fermentation test (lactose bouillon, glucose bouil-

lon), ferments; reaction, acid; litamusgar, blue colonies; gelatine, liquifies; motility, slight; litmus milk, coagulated second day, heliotrope; potato, white, moist growth; Elsner's, moulds; indol, slight. Remarks, proteus vulgaris.

#### MONROE.

Water from a 750-foot well, has an odor and taste of sulphur. No sewerage system. Samples No. 14 from the mouth of the well at the pumping station. Pretty good plant in brick station-house, but pump and engine are too light. This is the brag water of the State; claimed to be charged with lithia and "cures liver, kidney and bladder diseases." Has never been analyzed to date. It belongs to the town.

## Chemical Analysis.

Total solid matter in solution and suspension	11.4	gr. per U. S. gal.
Hardness	5.65	deg. Clarke's sc.
Equivalent to calcium carbonate	4.65	gr. per U.S. gal.
Chlorine	1.25	gr. per U. S. gal.
Free ammonia	.0295	parts per mil.
Albuminoid ammonia	.0572	parts per mil.
Nitrogen as nitrates	.095	parts per mil.
Nitrogen as nitrites	None.	

### Bacteriological Analysis by Dr. Pate.

No. of sample, 14; source, Monroe; date, October 9, 1900; number of bacteria per C. C., 40; fermentation test (lactose bouillon), does not ferment, (glucose bouillon), does not ferment; reaction, acid; litmus agar, blue colonies; gelatine, does not liquify; motility, active; litmus milk, coagulated sixth day; potato, white, moist, elevated; Elsner's, no growth; indol, none. Remarks, water good.

### GASTONIA.

A new water and sewerage system, very full, but not yet completed. Source, Long Creek, but was very muddy at my visit. The plant is very complete, has two Worthington pumps, two dynamos and filter, all in a new substantial brick building and a large reservoir adjoining. The works were yet in the hands of the engineers and contractor, who asked that the water be not yet sampled, and as John Love, the city treasurer and master spirit of the enterprise, concurred in the request, I came away without samples. The reservoir was half full, but the pipes were not yet charged, and, technically, it was not yet municipal water.

### STATESVILLE.

Water from deep wells. Sewerage system not completed. Sample No. 12, taken from Dr. Hill's drug store, has been analyzed once.

# Chemical Analysis.

Total solid matter in solution and suspension	4.1	gr. per U. S. gal.
Hardness	2.00	deg. Clarke's sc.
Equivalent to calcium carbonate	1.00	gr. per U.S. gal.
Chlorine	.25	gr. per U.S. gal.
Free ammonia	.0465	parts per mil.
Albuminoid ammonia	.0612	parts per mil.
Nitrogen as nitrates	.138	parts per mil.
Nitrogen as nitrites	None	

## Bacteriological Analysis by Dr. Pate.

No. of sample, 12; source, Statesville; date, October 5, 1900; number of bacteria per C. C., 5493; fermentation test (lactose bouillon, glucose bouillon), ferments; reaction, acid; litmus agar, blue and red colonies; gelatine, does not liquify; motility, slight; litmus milk, coagulated fourth day, heliotrope; potato, slight, moist growth; Elsner's, moulds; indol, trace. Remarks, suspicious.

### REIDSVILLE.

No sewerage system. Water from a 29-foot well with small feeders, affording 350,000 gallons per day. Never analyzed. Samples No. 4, taken from tap in Dr. Sapp's drug store. This water is sold at 30 cents per 1,000 gallons, and they are very proud of it.

## Chemical Analysis.

Total solid matter in solution and suspension	5.8	gr. per U. S. gal.
Hardness	3.55	deg. Clarke's sc.
Equivalent to calcium carbonate	2.55	gr. per U.S. gal.
Chlorine	.40	gr. per U.S. gal.
Free ammonia	.0610	parts per mil.
Albuminoid ammonia	.0851	parts per mil.
Nitrogen as nitrates	.627	parts per mil.
Nitrogen as nitrites	None.	

### Bacteriological Analysis by Dr. Anderson.

I found 21 colonies to the cubic centimeter from the analysis made of drinking water sent by Colonel Shaffer from Reidsville, N. C. All benign. The water is good.

#### ROCKY MOUNT.

Water and sewerage systems, but the latter limited in extent. Source of supply, Rocky Creek, which, but for one mill-pond, would be practically unexceptionable. Samples No. 21, from tap in Griffin's drug store.

# Chemical Analysis.

Total solid matter in solution and suspension	4.8	gr. per U. S. gal.
Hardness	3.30	deg. Clarke's sc.
Equivalent to calcium carbonate	2.30	gr. per U. S. gal.
Chlorine	.40	gr. per U. S. gal.
Free amomnia	.0724	parts per mil.
Albuminoid ammonia	.1130	parts per mil.
Nitragen as nitrates	Trace	·.
Nitrogen as nitrites	None	

# Bacteriological Analysis by Dr. Anderson.

The sample of drinking water sent by Colonel A. W. Shaffer from the public water supply of Rocky Mount shows 42 colonies to the C. C. This water is good, as shown by analysis for bacteria.

### TARBORO.

Tarboro possesses both a water and sewerage system, the former from driven wells near the river above town. It is the property of the city. Samples No. 20, taken from Zoeller's drug store tap.

### Chemical Analysis.

Total solid matter in solution and suspension	7.4	gr. per U. S. gal.
Hardness	4.00	deg. Clarke's sc.
Equivalent to calcium carbonate	3.00	gr. per U. S. gal.
Chlorine	.60	gr. per U. S. gal.
Free ammonia	.0414	parts per mil.
Albuminoid ammonia	.0556	parts per mil.

## Bacteriological Analysis by Dr. Anderson.

There were only six colonies to the C. C. in the bacteriological analysis of sample of drinking water sent me by Colonel A. W. Shaffer from Tarboro. The sample is very good.

#### SALEM.

No change in general conditions since last report.

## Chemical Analysis.

Total solid matter in solution and suspension	3.3	gr. per U. S. gal.
Hardness	1.90	deg. Clarke's sc.
Equivalent to calcium carbonate	.90	gr. per U. S. gal.
Chlorine	.35	gr. per U.S. gal.
Free ammonia	.0774	parts per mil.
Albuminoid ammonia	.0671	parts per mil.
Nitrogen as nitrates	.32	parts per mil.
Nitrogen as nitrites	None.	

# Bacteriological Analysis by Dr. Pate.

No. of sample, 7; source, Salem; date, October 3, 1900; number of bacteria per C. C., 120; fermentation test (lactose bouillon, glucose bouillon), does not ferment; reaction, acid; litmus agar, blue colonies; gelatine, does not liquify; motility, slight; litmus milk, coagulated fourth day; potato, yellow, moist growth; Elsner's, no growth; indol, none. Remarks, water good.

### NEW BERN.

General condition same as heretofore.

# Chemical Analysis.

Total solid matter in solution and suspension	11.4	gr. per U. S. gal.
Hardness	7.70	deg. Clark's sc.
Equivalent to calcium carbonate	6.70	gr. per U. S. gal.
Chlorine	.75	gr. per U. S. gal.
Free ammonia	.0187	parts per mil.
Albuminoid ammonia	.0629	parts per mil.

### Bacteriological Analysis by Dr. Pate.

No. of sample, 19; source, New Bern; date, November 22, 1900; number of bacteria per C. C., 124; fermentation test (lactose bouillon, glucose bouillon), does not ferment; reaction, acid; litmus agar, blue colonies; gelatine, does not liquify; motility, slight; litmus milk, not coagulated; potato, white, dry; Elsner's, no growth; indol, none. Remarks, water good.

### SALISBURY.

No change in general condition since last report.

Total solid matter in solution and suspension	4.7	gr. per U. S. gal.
Hardness	3.30	deg. Clarke's sc.
Equivalent to calcium carbonate	2.30	gr. per U. S. gal.

Chlorine	.30° gr. per U. S. gal.
Free Ammonia	.0759 parts per mil.
Albuminoid ammonia	.0922 parts per mil.
Nitrogen as nitrates	.175 parts per mil.
Nitrogen as nitrites	

The sample of drinking water sent from Salisbury by Colonel Shaffer shows 22 colonies to the C. C. The water is good.

### WILSON.

No change in general condition since my last inspection.

# Chemical Analysis.

Total solid matter in solution and suspension		gr. per U.S. gal.
Hardness	1.15	deg. Clarke's sc.
Equivalent to calcium carbonate		gr. per U. S. gal.
Chlorine		
Free ammonia		
Albuminoid ammonia		
Nitrogen as nitrates	.19	parts per mil.
Nitrogen as nitrites		

# Bacteriological Analysis by Dr. Anderson.

The sample of municipal water drawn by me at request of Colonel Shaffer from the Wilson water-works on the 22d day of October, 1900, shows 56 colonies to C. C., all of which are of benign form. The water is good.

#### WINSTON.

General conditions unchanged since my last inspection.

Total solid matter in solution and suspension	-	gr. per U. S. gal.
Hardness	1.75	deg. Clarke's sc.
Equivalent to calcium carbonate	.75	gr. per U. S. gal.
Chlorine	.30	gr. per U. S. gal.
Free ammonia	.0685	parts per mil.
Albuminoid ammonia	.0695	parts per mil.
Nitrogen as nitrates	.307	parts per mil.
Nitrogen as nitrites		

### Bacteriological Analysis by Dr. Pate.

No. of sample, 6; source, Winston; date, October 3, 1900; number of bacteria per C. C., 80; fermentation test (lactose bouillon, glucose bouillon), does not ferment; reaction, acid; litmus agar, blue colonies; gelatine, does not liquify; motility, active; litmus milk, not coagulated sixth day; potato, slight, moist growth; Elsner's, no growth; indol, none. Remarks, water good.

#### HENDERSON.

No change in general conditions since last report.

## Chemical Analysis.

Total solid matter in solution and suspension	4.4	gr. per U. S. gal.
Hardness	1.35	deg. Clarke's sc.
Equivalent to calcium carbonate	.35	gr. per U. S. gal.
Chlorine	.40	gr. per U. S. gal.
Free ammonia	.1009	parts per mil.
Albuminoid ammonia	.4121	parts per mil.
Nitrogen as nitrates	.272	parts per mil.
Nitrogen as nitrites	None.	

## Bacteriological Analysis by Dr. Pate.

No. of sample, 2; source, Henderson; date, September 21, 1900; number of bacteria per C. C., 320; fermentation test (lactose bouillon, glucose bouillon), does not ferment; reaction, acid; litmus agar, blue colonies; gelatine, does not liquify; motility, active; litmus milk, not coagulated fourth day; potato, moist growth; Elsner's, no growth; indol, none. Remarks, water fair.

#### GOLDSBORO.

General conditions unchanged since last report.

Total solid matter in solution and suspension	4.1	gr. per U. S. gal.
Hardness	.00	deg. Clarke's sc.
Equivalent to calcium carbonate	.00	gr. per U. S. gal.
Chlorine	.30	gr. per U. S. gal.
Free ammonia	.0559	parts per mil.
Albuminoid ammonia	.1863	parts per mil.
Nitrogen as nitrates	.255	parts per mil.
Nitrogen as nitrites	None.	

The bacteriological analysis of sample of water sent from Goldsboro public supply shows 33 colonies to the cubic centimeter. All tests show the water to be good. Sample forwarded by Colonel Shaffer September 28, 1900.

#### FAYETTEVILLE.

This city has two systems of water-works, owned by different parties. One taken from the run of Cross Creek, a fine, clear, strong, living stream, the other from the springs on Haymount Hill. Having taken my samples from the latter two years ago, I took this year's samples, numbered 16, from Cross Creek water, a running street hydrant at the market-house.

# Chemical Analysis.

gal.
s sc.
gal.
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### Bacteriological Analysis by Dr. Pate.

No. of sample, 16; source, Fayetteville; date, November 23, 1900; number of bacteria per C. C., 80; fermentation test (lactose bouillon, glucose bouillon), does not ferment; reaction, acid; litmus agar, blue colonies; gelatine, does not liquify; motility, slight; litmus milk, not coagulated; potato, very slight growth; Elsner's, none; indol, none. Remarks, water good.

### ASHEVILLE.

The general condition as to supply and plant are the same as at last report.

\*Chemical Analysis.\*

Total solid matter in solution and suspension	3.2	gr. per U. S. gal.
Hardness	1.10	deg. Clarke's sc.
Equivalent to calcium carbonate	.10	gr. per U. S. gal.
Chlorine	.20	gr. per U. S. gal.
Free ammonia	.0537	parts per mil.
Albuminoid ammonia	.0742	parts per mil.
Nitrogen as nitrates	.197	parts per mil.
Nitrogen as nitrites	None.	

The sample of drinking water sent from Asheville by Colonel Shaffer shows 52 colonies to the C. C., all benign. The water is good.

#### RALEIGH.

This company since last biennial report and inspection have practically installed a new filter plant of the improved Hyatt type, consisting of two new filters of the New York Filter Manufacturing Company's gravity type, having a capacity of 500,000 gallons each in 24 hours, and changing the three old iron filters from the old pressure type to conform to the new, or gravity filter. These three have an aggregate capacity of 1,000,000 gallons, and a settling tank has been added with a capacity of 1,000,000 gallons. The plant now comprises the very latest improvements in mechanical filtration and has an aggregate capacity of 2,000,000 gallons of water per day of 24 hours.

## Chemical Analysis.

Total solid matter in solution and suspension	2.8	gr. per U. S. gal.
Hardness	1.55	deg. Clarke's sc.
Equivalent to calcium carbonate	.55	gr. per U. S. gal.
Chlorine	.30	gr. per U. S. gal.
Free ammonia		
Albuminoid ammonia	.0740	parts per mil.
Nitrogen as nitrates	.1975	parts per mil.
Nitrogen as nitrites	None	

### Bacteriological Analysis by Dr. Pate.

The sample of water sent to me by Colonel Shaffer July 14th, from Raleigh, N. C., shows 76 colonies to the C. C., all of which are of the benign form. The water is good.

### GREENSBORO.

Water was very low and very muddy, with universal complaint everywhere. It was so low and so bad that a pending contract for its purchase by the city was cancelled. Samples No. 5 were taken from the faucet of Holton's drug store on Main street. The State Normal and Industrial College were filtering and boiling all their water.

Total solid matter in solution and suspension	8.7	gr. per U. S. gal.
Hardness	2.40	deg. Clarke's sc.
Equivalent to calcium carbonate	1.40	gr. per U. S. gal.

Chlorine	.35 gr. per U. S. gal.
Free ammonia	.0745 parts per mil.
Albuminoid ammonia	.2773 parts per mil.
Nitrogen as nitrates	.44 parts per mil.
Nitrogen as nitrites	Trace.

There were 604 colonies found in the bacteriological analysis of water sent to me by Colonel Shaffer from Greensboro, some of which were intestinal bacilli. The water is not good.

#### DURHAM.

I found Durham water very low, very turbid, pumping from both sources of supply, the creek and river, and the supply inadequate in case of fire. Samples numbered 24, taken from street hydrant, corner Main and Cochran streets.

## Chemical Analysis.

Total solid matter in solution and suspension	3.3	gr. per U. S. gal.
Hardness	1.75	deg. Clarke's sc.
Equivalent to calcium carbonate	.75	gr. per U. S. gal.
Chlorine	.40	gr. per U. S. gal.
Free ammonia	.0812	parts per mil.
Albuminoid ammonia	.1084	parts per mil.
Nitrogen as nitrates	.200	parts per mil.
Nitrogen as nitrites	None.	

# Bacteriological Analysis by Dr. Anderson.

The sample of water sent by Colonel Shaffer, September 19, 1900, from Durham, shows 76 colonies to the cubic centimeter, slightly infected with intestinal bacilli. The water is not good.

Second analysis one week later.

The last sample of drinking water sent me for bacteriological analysis shows only 22 colonies to the C. C., all of which are of benign form. The water is good, as shown from the analysis of this sample.

#### CONCORD.

Water-shed has been greatly improved by removal of all closets from the surface and clearing up the grounds. Samples No. 6, taken from faucet in Dr. Johnson's drug store, who balanced off old scores on account of a former report by charging fifty cents for an empty bottle. The town is agitating a new water supply from a small lake, three miles out, of excellent water.

### Chemical Analysis.

Total solid matter in solution and suspension	11.8	gr. per U. S. gal.
Hardness	5.25	deg. Clarke's sc.
Equivalent to calcium carbonate	4.25	gr. per U. S. gal.
Chlorine	1.60	gr. per U. S. gal.
Free ammonia	.0534	parts per mil.
Albuminoid ammonia	.0444	parts per mil.
Nitrogen as nitrates	7.02	parts per mil.
Nitrogen as nitrites	None.	

## Bacteriological Analysis by Dr. Pate.

No. of sample, 9; source, Concord; date, October 6, 1900; number of bacteria per C. C., 1,680; fermentation test (lactose bouillon, glucose bouillon), ferments; reaction, acid; litmus agar, red and blue colonies; gelatine, does not liquify; motility, slight; litmus milk, coagulated third day, pink; potato, yellowish, dry growth; Elsner's, pale pink colonies; indol, considerable. Remarks, intestinal bacillus.

### CHARLOTTE.

Charlotte has purchased its water-works from the original company and greatly improved its water-shed, machinery and service, but the supply is inadequate and not creditable to that enterprising city. Samples numbered 10, taken from faucet in Dr. Jordan's drug store, corner of Trade and Tryon streets.

### Chemical Analysis.

Total solid matter in solution and suspension		gr. per U. S. gal.
Hardness	3.00	deg. Clarke's sc.
Equivalent to calcium carbonate	2.00	gr. per U. S. gal.
Chlorine	.30	gr. per U. S. gal.
Free ammonia	.0828	parts per mil.
Albuminoid ammonia	.0897	parts per mil.
Nitrogen as nitrates	.202	parts per mil.
Nitrogen as nitrites	None	

## Bacteriological Analysis by Dr. Pate.

No. of sample, 10; source, Charlotte; date, October 8, 1900; number of bacteria per C. C., 80; fermentation test (lactose bouillon, glucose bouillon), no fermentation; reaction, acid; litmus agar, blue colonies; gelatine, does not liquify; motility, active; litmus milk, coagulated fourth day; potato, white, elevated, moist; Elsner's, moulds; indol, none. Remarks, water good.

#### WILMINGTON.

Wilmington continues to take her water from North East River, just above its junction with the Cape Fear, a little north of the corporation limits, but much of its drinking water is derived from cisterns, in which they have great faith and bestow upon them great care. The city is unprovided with a system of sewerage, and to this, I think, may be ascribed their escape from an epidemic of typhoid. With such a system emptying its sewage into the river from every street reaching its banks, to ebb and flow with the tides and be forced up the North East River shore, past the intake by the counter currents of Cape Fear River and the incoming tides, how could they escape the devastating epidemic who are destitute of cisterns?

The company has devoted three years of labor and large sums of money in an effort to reach pure water through an artesian well at the intake in the upper end of the town. They went down 700 feet, but finding only salt sea water, unfit for use, they abandoned it and started another some ten feet away from the first. This last is now over 1,300 feet in depth, with salt sea water boiling out of the pipe. But the operators, believing that good water lies below, and possessed with the courage of their convictions, declare they will find water there or tap the level of Charleston's well (2,000 feet) before they give it up. Their courage and perseverance deserve success. Let us hope it will come to them soon and abundant, even though an inexhaustible supply of the finest water earth affords flows past them continuously on the surface, and can be reached beyond contamination a few miles above.

Samples numbered 18, taken from faucet in Dr. — 's drug store, adjoining The Orton House.

### Chemical Analysis.

Total solid matter in solution and suspension	4.5	gr. per U. S. gal.
Hardness	2.00	deg. Clarke's sc.
Equivalent to calcium carbonate	1.00	gr. per U. S. gal.
Chlorine	.50	gr. per U. S. gal.
Free ammonia	.1447	parts per mil.
Albuminoid ammonia	.2839	parts per mil.

## Bacteriological Analysis by Dr. Pate.

No. of sample, 18; source, Wilmington; date, November 23, 1900; number of bacteria per C. C., 400; fermentation test (lactose bouillon, glucose bouillon), does not ferment; reaction, acid; litmus agar, blue and red colonies; gelatine, does not liquify; motility, active; litmus milk, coagulated fourth day; potato, slight, moist growth; Elsner's, moulds; indol, trace. Remarks, no suspicious organisms isolated; water safe.

The numbered samples referred to are the private numbers on the samples taken out from each town, one to Bacteriologist, the other to Chemist, both bearing the same number from any one town. It was believed to be well to do this, that only the Board might possess the key to the sources of the water, but the express company generally labeled the boxes under their rules.

I am of the opinion that very few water companies comply with the law respecting quarterly analyses, and I saw no indication of intention to do so, judging from the indifference with which the circulars of the Board were received from me. It is not so with the city authorities who do not own their own works. These received them gladly, and I think it would be a good plan to send duplicates to the mayors.

I see but one way to compel these analyses, or ascertain whether they are made, viz.: let the law provide that the companies shall file a copy of each analysis with the Board, or better still, that the State Chemist and State Bacteriologist shall make the analyses, and themselves furnish a copy. This last would be effectual. This would do away with the necessity of the expensive biennial sampling and inspection by this Board, which increases with increasing municipal water-works.

All of which is respectfully submitted.

RALEIGH, N. C., December 1, 1900.

A. W. SHAFFER, S. E.

[From the Bulletin for December, 1900.]

### ANOTHER ADVANCE IN SANITATION IN NORTH CAROLINA.

As our readers already know, the appropriation made by the State to the Board of Health is quite small, entirely insufficient for the proper administration of such a bureau. Bacteriology now plays such an important part in the elucidation of the problems of disease that no equipment of a State health board can be considered complete without a bacteriological laboratory. We made an attempt in this direction before the Legislature of 1899 by incorporating in "An Act to Protect Water Supplies" a section appropriating annually \$500 for this work, but the celerity, the almost vicious celerity, we might say, with which this section was stricken out made us despair. But learning early last spring that the State Board of Agriculture proposed establishing a bacteriological laboratory for its own special work, and not caring particularly under which name or who received the credit so the object was attained, a ray of hope appeared. We brought the matter to the attention of our Board at its annual meeting in May and the following preamble and resolutions were adopted:

Whereas, Typhoid fever, with the exception of tuberculosis, is the most fatal to our people of all the preventable diseases, the number of

deaths in the State from that cause alone annually being more than 1,000, and the number of cases that recover probably ten times as many; and

Whereas, This disease is nearly always conveyed by infected drinking water, which infection can be only ascertained by a bacteriological examination; and

Whereas, The appropriation made by the State for the work of the Board of Health is entirely inadequate to provide for more than a very few such examinations of the public water supplies during each biennial period; and

WHEREAS, We have been informed that the Board of Agriculture proposes to establish a bacteriological laboratory, with an expert in charge, for the prosecution of its work in relation to pure food and to the diseases of animals; therefore

Resolved. That the said Board of Agriculture be respectfully requested, for the good of the people of the State, to slightly and inexpensively extend the scope of its laboratory so as to include investigations into the purity of suspected drinking waters, especially of wells and springs in the country districts, said investigations to be made upon the request of the Secretary of the Board of Health, under such regulations and restrictions as the Board of Agriculture may prescribe.

Resolved, That if the Board of Agriculture considers this request favorably, the Secretary and the Engineer of the Board of Health confer with the officials or the committee having the matter in charge upon request, and arrange with them the details of the work.

The matter was brought before the Board of Agriculture at its meeting in June, and our request promptly and cheerfully granted. The order for the additional apparatus necessary was made, but the election of a bacteriologist was postponed until inquiries could be made as to the proper man. This step, however, was taken at the regular meeting in December, and Mr. Gerald McCarthy, who has done much work of this character, was elected.

It is proposed to examine, as soon as possible, the water supplies of all the State institutions and large schools, private as well as public, in order to establish their normal standard, and also the waters of all suspected wells and springs. The work cannot be done for mere fancy, simply to gratify the curiosity of one who just wants to know whether there are any "bugs" in his well, but only where there is reasonable ground to suspect the water of causing disease. Application for bacteriological analyses should be made through the Secretary of the Board of Health. As the main motive is to help the farmers, we hope our country physicians, particularly, having cases of typhoid fever, will avail themselves of the services offered.

We cannot commend too highly the liberal and progressive spirit shown in this matter by the Board of Agriculture. We feel sure that more real good to the people, especially the country people, will come from the small expenditure for this purpose than from an equal amount devoted to any other work.

We append a paper on the subject by Mr. McCarthy:

BIOLOGICAL EXAMINATION OF WATER SUPPLIES.

#### BY GERALD MCCARTHY,

Botanist, North Carolina Department of Agriculture.

Modern sanitarians are a unit in declaring that the first requisite for the healthfulness of any neighborhood is a water supply uncontaminated by human and animal excrements. Were good health held at its proper value, even from a financial stand-point, every public water supply and private wells and springs would be systematically examined at intervals short enough to prevent the unconscious use of contaminated water.

Massachusetts was the first State in the Union to undertake a systematic study of the public water supplies. The work there started in 1887 has marked the beginning of a new era in sanitary science. The New England States and New York now make over 10,000 annual biological water analyses. The Southern States, on account of their warmer climate and consequently more rapid development of micro-organisms, and the presence of a large, ignorant and shiftless laboring population, are much more liable than the New England States are to have polluted water supplies. Yet here practically nothing has been done towards systematic examination of the purity of drinking water.

"Pure water," in a sanitary sense, is a relative term. Absolutely pure water does not exist in nature. The water of deep artesian wells and gushing springs, and rain-water caught on a clean surface after the atmosphere has been washed free of dust, are the purest natural waters.

An unfiltered water containing less than 500 bacteria per cubic centimeter is considered very pure. The "purified" water supplied by city water companies usually contains from 5,000 to 20,000 bacteria per C. C. Most of these water bacteria are innocuous, but where they exist in large numbers pathogenic species are also liable to gain an entrance and multiply with disastrous results to the public.

A complete analysis of potable water should be threefold, viz.: Biological, physical and chemical. Where only partial analysis is given, by far the most important is the biological examination. The purpose and real value of analysis of potable water is misunderstood, even by many professed sanitarians! Except when testing for mineral constituents and metallic poisons, no sanitary analysis of water can do more than afford indications upon which the analyst may base a judgment of the quality of the supply. But many other factors must enter into such a judgment. The local environment, geology, climatology, the number and social condition of the population living upon the water-shed, are all prime factors

in forming such a judgment. Another thing to be understood is, that isolated, occasional examinations of water supplies possess very little intrinsic value. It is first necessary to determine, by a course of systematic examinations, the normal biology of the water supply. After this point is attained, subsequent work consists mainly in noting deviations from the normal mean. Any considerable variation from the mean indicates pollution from some source. A competent biologist can, from knowledge of the local environment and the specific character of the germs, determine their approximate source. To be of real protection to the consumers of water, such examinations must be sufficiently frequent to make it impossible for any dangerous bacterial invasion to escape notice. To insure safety, a biological and physical examination of water supplies should be made once a week and a chemical examination once a month.

Water from deep wells is much less liable to sudden changes, or variations from its mean biology, than is surface-water. But any drinking water supply, which suddenly alters its usual taste, odor or color, should be at once examined by a competent biologist. In the meantime such water should not be used unless it is first sterilized by boiling.

A few words upon domestic filters may not be out of place here. There are numerous patent forms upon the market. Upon all of these, except those of the Pasteur-Chamberland type, the biologist must pronounce an anathema! After being used a short time these filters pollute instead of purifying water. They collect and concentrate the filth suspended in the water and this forms a breeding nest for the microbes far more favorable for their increase than the original unfiltered water was! Many river waters carry considerable sediment, which render them unsightly. This sediment is easily removed by any form of filter, but such removal is a matter of æsthetics rather than health. The limpid, clear filtrate may be far more dangerous than the turbid unfiltered water. The safest way to clear a turbid drinking water is to filter it through a clean thin white flannel.

The organisms and detritus commonly found in surface-water supplies may be grouped as follows:

- 1. Plants.—Algæ, fungi, bacteria.
- 2. Animals.—Infusoria, crustaceans, worms.
- 3. Detritus.—Hairs, fibres, scales and fœcal matter.

The algae of sanitary importance most frequently found in Southern waters, are as follows:

- (a) Diatoms.—Asterionella, melosira and synedra. All these secrete an oily matter which gives a disagreeable, fishy taste to water.
- (b) Blue-green Algx.—Anabæna, clathrocystis and oscillaria. These also give water a bad taste and their presence indicates serious organic pollution.
  - (c) Grass-green Alga.—Palmella, eudorina, volvox, protococcus, and

spirogyra. The first three give a bad taste to water. The last two are not usually present in water fit for human consumption.

Of crustaceans our surface-waters contain cyclops, daphnia and bosmina, all of which are characteristic of impure water.

Of infusoria, among many other genera, we find the following of special sanitary interest: Cryptomonas, dinobryon, peridinium, synura, uroglena, spongilla and pectinatella. All of the above infusorians give various strange tastes and smells to waters, generally of an "ancient and fishlike" kind. Spongilla and pectinatella often clog the service pipes of city water systems. Of protozoans in our waters, we may suspect the hæmatozoans which cause malarial fevers, and amæbæ which cause dysentery in humans and cattle. Severe losses of cattle occur in some of the swampy sections of North Carolina, the chief symptoms being those common to dysentery.

Of parasitic, intestinal worms, waters often harbor the eggs and spores of the various tape and thread-worms common to men and animals. The worm parasites of sheep are especially abundant where these animals come to drink, and such spots serve to inocculate the young lambs.

Of detritus commonly found in waters, we may mention the hairs of rats and mice and scales of fishes, indicating decaying bodies in the supply. Epithelial scales and particles of amorphous feecal matter indicate gross and direct contamination by dejecta.

The fungi usually found in water are molds, a few species of Phycomyces parasitic on fishes, and yeasts. Yeasts are certain indication of sewage pollution.

Bacteria are by far the most important organisms, from a sanitary stand-point, found in water supplies. The bacterial flora of water is very large and is from a systematic stand-point badly confused. The greater number of species are, however, harmless and even useful species. But waters rich in harmless bacteria are liable at any time to receive and encourage the development of pathogenic species. Of pathogenic bacteria the one species of overshadowing importance in America is the typhoid germ—bacillus typhosus. The cholera bacillus is of great importance in other regions, but does not occur in American waters. The bacilli of anthrax, hog cholera, cerebro-spinal meningitis and other diseases are often disseminated with drinking water.

Besides the bacteria above mentioned there are various genera of socalled thread, sulphur and iron bacteria which cause water companies serious trouble by filling service-pipes and mains and thus hindering proper circulation.

In a sanitary analysis of water the bacteria especially sought for are those of the fæcal group; of which the type is bacillus coli-communis. The typhoid bacillus, hog cholera bacillus and swine plague bacillus are the most important members of this group. Bacillus enteritidis sporogenes, B. cloacæ and B. amethyskins are other bacteria characteristic of sewage.

The difficulty and expense of making a bacteriological examination of water is such that many scientists have sought for a simple chemical method for determining the presence of bacteria in potable waters. Most of these chemical tests are based upon the assumption that the presence of nitrites in water is an index of the presence of bacteria, since the oxidation of ammonia to nitric acid in soil and water and the reverse process of reduction are due chiefly to bacterial activity. There are various chemicals which unite with dissolved nitrites to color the solution red or yellow. The standard test for nitrites in bacteriological analysis is sulphanitic acid and naphthylamine. These reacting with dissolved nitrites color the solution red. An enterprising German chemist has recently placed upon the market, under the trade name of "Healthin," a compound of this class for which he makes the following claims:

- 1. That the presence of nitrites in potable water is an index of bacterial pollution.
- 2. That nitrites—nitrous acid—is the chief product of the life activity of bacillus typhosus and B. cholera-asiaticæ.
- 2. That the dose of "Healthin" recommended will, when added to a tumblerful of water, infallibly determine whether such water has been polluted by sewage bacteria, including the two capital species above named.

In regard to these claims the writer is prepared to assert and prove (1) That while the presence of nitrites is always a bad sign, the absence of nitrites from a water sample does not always indicate a safe or pure water. (2) That the formation of nitrites, or what is usually the real case, the reduction of nitrates to nitrites, is not the result of the activity or growth of B. typhosus. Bacillus typhosus does not reduce nitrates. A sample of water may be swarming with typhoid germs and yet fail to give the nitrite re-action! (3) That the dependence upon "Healthin," or any other single test for indicating the potable quality of water, is inadequate, unwise, and liable to lead to disastrous results.

There is but one short and ready test that can be safely recommended for domestic use. This is the odor of the water after it has been heated to near the boiling point in a closely stoppered bottle. Take a clean four-ounce wide mouth bottle, fill with suspected water and cork tightly. Place bottle in a pan or kettle of water and heat until the water in outer vessel begins to boil. Then remove bottle, uncork and quickly apply nose to mouth of bottle. If polluted by sewage a distinct but evanescent odor of urine or faces can be detected. This test can be made more delicate by adding to the heated water one-half its volume of sulphuric ether. Shake the mixture vigorously for a few minutes. Replace cork and invert the bottle for five or ten minutes. The ether will rise to the surface. Now carefully loosen the cork and allow the water to drip away. Let the bottle stand uncorked until the ether evaporates. Smell the residue.

Water samples for biological analysis need not necessarily exceed four fluid ounces. But larger samples are sometimes desirable. The utmost care is needed to prevent accidental contamination while collecting the sample. The writer has devised a method whereby satisfactory samples for biological analysis can be sent by mail in ordinary mailing tubes. Express service is, however, always to be preferred.

As it seems desirable in the interest of public health that more attention should be paid to quality of drinking water, more especially that used in country neighborhoods, the State Department of Agriculture will make such examinations for citizens free of charge. But the samples must be taken in vessels furnished by the Department, and according to instructions, which will be sent to those who apply for analyses. Applications should be made to the Commissioner of Agriculture at Raleigh. Applicants will be required to pay postage or expressage both ways on bottles and samples.

The attention of health officers, country physicians and veterinarians is especially called to this offer, which, if utilized, cannot fail to elucidate the dissemination of many infectious diseases and prevent epidemics among men and animals.

#### DIRECTIONS FOR COLLECTING SAMPLES OF WATER.

If samples are to be mailed two four-ounce phials are sufficient. If to go by express two pint jars should be sent. To one of the pair of samples must be added 0.1 per cent. of Parietti's fluid. This fluid will prevent growth of all but feecal bacteria while the sample is in transit. The second sample is intended to show the normal bacteria, algae and other organisms present in the water. Both samples must be taken from same place and at same time.

Just before taking the samples wash the hands and arms thoroughly with hot water and soap. Dry on a clean fresh towel. Clean the finger nails.

If sample is from a pump, hydrant or tap let the water run to waste for a few minutes before filling bottles. If from a stream, pond or reservoir select a place as free as possible from mud or sediment. If from a spring or open well draw a bucketful in the usual way and take the samples from this.

To take the sample grasp the bottle near the bottom and lower it until top is below surface—go as deep as possible without striking bottom. With other hand open the bottle under water and allow it to fill to within one inch of top. Cover again under water. Now withdraw bottle, seal or stopper tightly and wipe dry. Return to carrying case and forward as soon as possible. In bottles and jars sent from the Department the Parietti fluid, or a little sugar holding it, will be enclosed in one of the bottles.

CHEMICAL ANALYSES OF SUNDRY DRINKING WATERS BY THE STATE CILEMIST.

A Harward, Durham L. Burns, Raleigh G. Sacron, Biscoe H. Godrich, Asheville W. Propst, Ilickory S. Norwood, Releigh M. McPheeters, Raleigh H. Koro, Jr., Charlotte E. Knox, Jr., Charlotte E. Knox, Jr., Charlotte E. Knox, Jr., Charlotte C. Gracen, Isyetterille E. Knox, Jr., Charlotte C. Gracen, Isyetterille E. Knox, Jr., Charlotte C. Staton, Jaryoro C. Staton, Jarloto L. Staton, Tarloto L. Staton, Wilmington W. Murchison, Wilmington J. Love, Wilmington J. Love, Wilmington J. Eredew, Wilmington J. Sarton J. Eredew, Wilmington J. Sarton J. Eredew, J.	Well well in Capitol Well in Capitol Well in Capitol Well Well Well Well Well Well Well We	28.58.58.58.59.59.59.59.59.59.59.59.59.59.59.59.59.	. Hardness. 10 10 10 10 10 10 10 10 10 10 10 10 10 1	2 2 1 2 1 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2	-31 Chlorine.	Pree Ammonia. Ammonia	Albuminoid	Very small Trace Considerable Trace Trace Trace Trace Small	ns Vitrices.
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CHEMICAL ANALYSES OF SUNDRY DRINKING WATERS BY THE STATE CHEMIST—Continued.

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Calcium Carbonate.	1											1.75																				
Hardness.	L			1.80				_				3.10																				
Total Solids.	21.33	1.00	14.8	3.8	4.67	08.4	27.7	25°CI	5 -	2.0	-	3.5	6.45	90.9	6.17	12.0	2.08	9.17	3.25	3.58	6.15	11.45	35,08	10.58	16.8	29.33	1.5	2.5	6.51	7.17	1.75	24.42
Location.	Well			No. 2	No. 3	Well No. 4	Well-see	117.11	M CH		Citobon coll noor house	Well in vard of residence				Well in Capitol Square	Spring	Founder's well	Spring or well	Well	Well						Well	Well				******************************
Name and Address.	7. H. Worth, Raleigh	W. E. Abernethy, Kutherford College	. J. Edwards, Sanford	Ξ.		N. W. Wood Boloich	T Edward Conferd	N. Ketchie Mooresuite	Ulter's Limber Company Hob	ς.,	Butter's Lumber Company Hub	10841 Butter's Lumber Company, Hub	J. A. Alexander, Maynews	J. G. Steed, Steeds	ooresville Cotton Mills, Mooresville	. M. McPheeters, Raleigh	. W. White, Guilford College	≥.	. S. Mackae, Fayetteville	. II. Battle, Rocky Mount	Wiltkowsky, Charlotte	Giles,	Gilles, Wilmington		. Andrews, Far Landing	Wittkowsk	W. White,	. W. White, Guilford College	٠, ·	T. Leach,	T. Lesell,	cD. Rav. Handersonville
No.		10828 W			10001		10835 11	10837 N	10838 R	10839 B	10840 13	10841 B	10843 J.	10844	10846 M	10847 A.	10850 G	10851 G.	10853	1.09801	10867	200	ء د د		33 S	87	99	36.5	3:	3 C	7.0	46 M

CHEMICAL ANALYSES OF SUNDRY DRINKING WATERS BY THE STATE CHEMIST-Continued.

Zitrogen as Zitrites.		
Zitrogen as Zitrates.		
bionimudiA .sinommA	0.02 0.04 0.04 0.05 0.05 0.05 0.05 0.05 0.05	1075
Free Ammonia.	1,024 1,033 1,033 1,053 1,053 1,054	0
Chlorine.	2.08 2.25 2.25 2.02 2.03 2.03 2.04 2.04 2.04 2.05 2.05 2.05 2.05 2.05 2.05 2.05 2.05	-
Calcium Carbonates.	1,451 10.42 10.42 10.42 10.83 10.08 10.08 10.09	
Hardness.	113 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	
Total Solids.	7.51 10.03 3.12 3.12 3.12 3.12 3.40 41.64 41.64 41.64 41.64 3.85 3.85 3.85 3.85 3.85 3.85 3.85 3.85	0
Госаціон.	Big well. Little well. Artesian well Raney's spring. Raney's spring. Goldsboro Water Company. Artesian well. Fire hydrant.	
Name and Address.	47 G. G. Thomas, Wilmington 48 A. Sprunt & Son, Wilmington 56 McD Boyd, Culler 56 McD Boyd, Culler 57 J. W. Hues, Rocky Mount 71 G. B. D. Parker, Chinquapin 72 G. B. D. Parker, Chinquapin 73 James McKee, Raleigh 74 James McKee, Raleigh 75 James McKee, Raleigh 76 J. W. Hussell, Raleigh 77 James McKee, Raleigh 78 J. M. McYer, Gulf 70 J. W. Raney, Kittrell 70 G. W. Raney, Kittrell 71 G. Mishie, Durham 72 J. M. McYer, Gulf 74 J. W. McYer, Gulf 75 J. W. McYer, Gulf 76 J. W. Marker, Jeaffet 76 J. W. McYer, Gulf 77 G. W. Raney, Kittrell 78 J. W. McYer, Gulf 79 J. W. McYer, Gulf 70 J. W. McYer, Gulf 70 J. W. McYer, Gulf 71 J. W. McYer, Guldshor 72 S. G. Worth, Edenton 73 J. W. E. Rankin, Asheville 74 J. M. McYer, Gulf 75 J. W. McYer, Gulf 76 J. W. McYer, Gulf 76 J. W. McYer, Gulf 77 J. W. McYer, Gulf 78 J. M. McYer, Gulf 78 J. M. McYer, Gulf 79 J. M. McYer, Gulf 70 J. W. McYer, Gulf 70 J. W. McYer, Gulf 71 J. M. McYer, Gulf 72 J. M. McYer, Gulf 73 J. M. McYer, Gulf 74 J. M. McYer, Gulf 75 J. W. McYer, Gulf 75 J. W. McYer, Gulf 76 J. W. McYer, Gulf 76 J. W. McYer, Gulf 77 J. McYer, Gulf 78 J. W. McYer, Gulf 79 J. W. McYer, Gulf 70 J. W.	T. Dioone, During

CHEMICAL ANALYSES OF SUNDRY DRINKING WATERS BY THE STATE CHEMIST—Continued.

Vitrogen as Vitrites.	.0925	Trace.	900	Trace.	Lince.	State	0 b c c c c c c c c c c c c c c c c c c					Trace.		Some.	
Zitrogen as Zitrates.	2,4,7	9 21. 25 21. 35				Prace	lrace 1.00	25. 85 86. 85	.40		# # # #	13.3 6.03	2 2 2	× 9	66
bionimudik .sinommk	.0237 .0075	199		6770.	130	0537	- 20TO	850°	.0162 .721.	6890.	0000	1149	0565	1706	6190
Free Ammonia.	0.00 200 500 500 500 500 500 500 500 500 5														
Chlorine.	왕동원												•		
Calcium Carbonate.	16.0 m														
Hardness.	8.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00														
Total Solide.	80.88	22.03	188	8.0.2	19.8	2.2	3.0	19.7	# # # # # # # # # # # # # # # # # # #	4.4	6.7.	77 × 5	4 25	25.6	0.5
Location.	Greensboro Water Supply, Bullalo Creek	Well Well Well	Well Well at Graded School		Purpost cor. Hillsboro and Harring for Ne	Raleigh Water Co.			Cintern	Artesian well	dand	Well	Will well	d mul	
Name and Address.	3. W. Best, Greensboro.	4. F. Robinson, Goldsboro	I. E. Robinson, Goldsboro	V. A. Hoke, Lincolnton S. Roland, Entherfordton C. Savietle Discrille	C. Chadbourn, Castle Hayne	. W. Murchison, Wilmington . B. Bain, Raleigh	7. J. Hicks, Oxford	7. J. Hicks, Oxford F. Harper, Wilmington	7. B. Cooper, Wilmington L. McDaniel, New Bern	. M. Street, Bolair I. N. Oliver, Rowland	. F. Sale, Raleigh A. Wellons, Smithfield	J. Rosenthal, Goldsboro	Clark, Charlotte	H3 T. P. Sale, Raleigh	. S. Harrison, Enfield . R. Walton, Randall

CHEMICAL ANALYSES OF SUNDRY DRINKING WATERS BY THE STATE CHEMIST—Continued.

Total Solids. Hardness. Calcinm Carbonate. Free Ammonia. Albuminoid Ammonia.	3.5 2.5 7.0 1499 1525 2.55 1.55 8 7.1 1003 8.8 7.8 7.3 0475 1001 1.1 1 2 1447 075	2. 1. 2.35 .109 .328 .328 .328 .328 .338 .338 .348 .34 .34 .35 .358 .338 .358 .358 .358 .358 .358	12
Location.	Winston water		G. A. Rose well Faucet of Raleigh Water Company- Stack-house
		Nount. Mount. Mount. Mount. Nount. Nount. Nount. Roaucke Rapids.	

CHEMICAL ANALYSES OF SUNDRY DRINKING WATERS BY THE STATE CHEMIST-Continued.

No.	Name and Address.	Location.	Total Solids.	Hardness.	Calcium Carbonate,	Chlorine.	Free Ammonia.	bionimudlk .sinommk	Nitrogen sa Nitrates.	Vitrogen as Vitrites.
808	Delyado Mills Wilmington		52.9	8.55		5	0689	1618		
200	Delgado Mille Wilmington		196	0 0		1	0040	200		3 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	Bado Mills	P 2 4 5 5 7 7 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	15	1 2		- 1	5	0020		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	Delgado Mills, w dinington		1	::		- 1	# 100	2010		1
	gado Mills,	***************************************	9.0	o ·		00	160	2000		
909	Delgado Mills, Wilmington		- 40.7	6.95		۲.	1005	9880	Trace	
507	Delgado Mills, Wilmington		13.5	695		œ	0432	0650	Trace	
508	Delgado Mills. Wilmington		17.2	10		22	0782	.0471	Trace	
	Cado Mills		10.9	7.5		10	0675	0575	Trace	
_	Cado Milla		10.5	7.65		40	86.60	0.30	Trace	
111	old Mills		1	4			1000	0.057	Thousand	1
	godo Mille		100	20.0		. 4	0.00	10000	Those	1
7	, all la	My the management of Character and District		ē ,			1050	1000	11800	
21	H. L. Thurston, Southern Pines.	Water Supply at Southern Pines Graven County Poor-house	16.5	- 9	- 6	Si S	212	11.19	: : : :3	
	0		1	25.0		0	1000	:	000	1
020	I. W. Halleman, Danotes	***************************************	1	3 -		5,0	61.0	100	60.	
	M. D. Dawson, Conellos		1	7		o i	2110	0000	11	
-	Mrs. K. H. Jones, Kaleign	***************************************	8.7.	× ·		C	10	2190:	2.41	
	r & W		10.6	7		4.	55	.0335	rů.	
529	Maxton		1.4	2!		.45	.0612	.0702	.0125	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	Union Copper Mining Company, Goldsboro∏	Honeyentt spring	2.7	1.75		4.	.0683	.055	.115	1
	Mrs. P. L. Bridgers, Wilmington	Cistern	3.5	33		e.5	17:37	.1873	5.17	£00°
34	D. B. Jordan, Cronly		94.3	3.6		35.1	1.2817	3705		
38	D. B. Jordan, Cronly		9.1	5.15		1.75	7660.	.3756		1
36	3. A. Matton, High Point.		15.1	5.35		1.50	.0787	.1567	4.16	.25
37.	I. O. Magruder, Winston	Well in tobacco factory	14.7	5.85		2.35	0.575	<b>7</b> 0.	8.88	
40	F. B. Higgins, Lynn		3.5	1.05		35	0.412	6510	.7.	
17	F. B. Hlegins, Lynn		ند	2.6		?!	190	.0433		
542	F. B. Higgins, Lynn		o i	2.1		3	037	67.0	Туве	
3	F. B. Higgins, Lynn		0	6		2 27	6130	0380		
4	W. R. Weaver, Charlotte		20	7.7		10	0.52	683.0	708.	
348	). B. Jordan Cronly		86.3	2		67.5	823	2650		
45	D. B. Jordan, Cronly		-	2		5	1.9826	7786		
199	Mrs. J. T. Holt, Wilson's Mills		6	1.05		7.5	0305	0787	_	Trace
552	I. H. Webb. Edenton		32.3	7.35		2.75	.7735	1362	3.17	19
1										

CHEMICAL ANALYSES OF SUNDRY DRINKING WATERS BY THE STATE CHEMIST—Continued.

March   Carlotte   C	street .	T   6.681   2.882   2.691   4.11   4.10   2.882   3.10   4.10   3	8.4.7.7.4.4.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2		nirold	ree wy	7	ı !!	
W. H. Briggs, Raleigh W. H. Worth, Raleigh W. G. Haywood, Raleigh E. K. Proctor, Jr. Lumberton E. K. Proctor, Jr. Lumberton E. W. Poctor, Jr. Lumberton H. W. Collins, Wilmington J. W. Townsend, Monroe J. A. Little, Wadesboro J. A. Little, Wadesboro J. H. Webb, Edenton	street.	19.9 11.4 11.4 10.2 11.6 11.6 11.6	7.5 5.20 6.35 6.35 7.15 7.2 7.2 7.2	3.25	) <del>  1</del>	4.0374	0.0542	7 57.	Trace
W. G. Haywood, Raleigh E. K. Proctor, Jr. Lumberton E. K. Proctor, Jr. Lumberton E. K. Proctor, Jr. Lumberton E. W. Shaffer, Jr. Lumberton J. W. Shaffer, Raleigh J. A. Little, Wadesboro J. A. Little, Wadesboro J. A. Little, Wadesboro J. H. Webb, Edenhon H. Webb, Edenhon H. W. Shaffer, Saleigh	street	11.4 11.6 11.6 11.6 11.6 3.3	6.35 6.35 6.35 7.15 6.9 7.25 7.35	6.5	3.6	.155	1190.	10.5	Trace
E. K. Proctor, Jr., Lumberton E. K. Proctor, Jr., Lumberton E. K. Proctor, Jr., Lumberton H. W. Collins, Wilmington H. W. Collins, Wilmington J. W. Townsend, Monroe J. C. Mithie, Durham J. C. Mithie, Durham J. A. Little, Wadesboro J. A. Little, Wadesboro J. A. Little, Edenboro J. H. Webb, Edenboro H. Web, H. Webb, Edenboro H. Webb, H. Webb, Edenboro H. Web, H. Webb, Edenboro H. Webb, H. Webb, Edenboro H. Web,		9.3 10.2 11.6 3.3 3.3	6.35 7.15 6.9 7.2 5.3	3 55	2.15	0305	.0471	6.66	Trace
E. K. Froctor, Jr. Lumberton E. K. Proctor, Jr. Lumberton H. W. Collins, Wilmington J. W. Townsand, Monroe A. W. Shaffer, Raleigh J. C. Michie, Durham J. A. Little, Wadesboro J. A. Little, Wadesboro J. H. Webb, Edenbox H. Wensel, Edenbox H.		2.01 .01 .02 .03 .03 .03 .03 .03 .03 .03 .03 .03 .03	6.9 7.2 7.3 7.3 7.3	5.35	.37	9960	.0864		1
H. W. Collins, Wilmington  W. Townsend, Monroe  A. W. Shaffer, Raleigh  J. C. Michie, Durham  J. A. Little, Wadesboro  J. A. Little, Wadesboro  J. H. Webb, Edenbon  H. Webb,		11.6 3.3 3.3	2225	5. IS	000	.037	0337		
J. W. Townsend, Monroe J. C. Michie, Buleigh J. A. Little, Wadesboro J. A. Little, Wadesboro J. A. Little, Wadesboro H. Webb, Edenhon, Now Rom,		333	5.5	6.2	2.12	0884	1127	10.	
A. W. Shaffer, Raleigh.  J. C. Michie, Durham. J. A. Little, Wadesboro. J. A. Little, Wadesboro. H. Webb, Edeubor. H. Webb, Edeubor.		85 E	1	4.3	1.36	0385	.0732	Trace	
J. C. Michle, Durham. J. A. Little, Wadesboro. J. A. Little, Wadesboro. J. H. Webb, Edenboro. H. Wendy, Edenboro. H. Webb, Edenboro.		or.		.75	94.	.0812	1084	6.	
J. A. Little, Wadesboro. J. H. Webb, Edenton. Hymen Sunal Company Now Bonn	1	?	2.05	1.05	ا ا	.0939	1214	.307	
J. H. Webb, Edenton	C	7.7	6.65	5 65	9.05	1090	0457	11.11	
Hymon Sunnin Company Now Bonn		31.1	4.8	7.4	600	5971	1441	197	
Hyman Supply Company, New Dern	Craven County Poor-house	14.6	10.95	9.95	.70	.2687	9901.	.175	
J. T. Albritt		3.9	1.35	35	9.	.0355	.0764	.225	
J. A. White, Mooresville		0.0	1.05	60.	35	.0637	10924	.462	
J. H. Smith, Plymouth		 	S.	6.85	z	1707	4080.	211.	91.
A		4; ¢	G0.1	66.	d (	.0694	.0389	1.41	
o by M. Cummings, Wilmington		N 0	4,	7	:::	1050.	6220	0.13	
A.I. M. Monning Durbom	and the first an	10	6.1	9 10	ه قد	0450	101	0761.	
. 6		. E	22.5	- 1	5 0	0579	0367	12.00	
9 Deloado Milla Wilmington		200	7.05	6.95	3 5	0240	0640	96	
OC. D. Benbow. Pinehurst		6	-	000	10	0844	0519	425	5
O W. L. McGhee, Franklinton		1.62		- c	3.45	177	0716	2.61	.0475
2 R. J. Hooks, Fremont		00	2.5	2	45	1055	0840		
3 I. T. Turlington, Smithfield		5.1	1.3	e.j	.45	.0832	.0684	.307	
R. R. Moore, Greensboro		8.5	3.6	5.6	.55	.0755	.0731	.457	
637 W. H. Rand, Raleigh	Institution	15.3	7.30	6.30	1.55	1424	0710	10.79	.2127
19 Mine III D And once Deletel.		7.5	0.0	0.0	07.	2100.	1001	101.01	

# VITAL STATISTICS.

No material advance, we regret to say, has been made in the collection of vital statistics, notwithstanding earnest efforts on our part to promote the work. Our last attempt consisted in sending to the various boards of aldermen and town commissioners the strongest letter we could write, asking those not reporting to do so and all to adopt the death return and certificate suggested by the Census Department of the General Government, and offering to supply free the necessary blanks, including burial permits bound in books. To make it still easier we sent a copy of a model ordinance, covering the subject, as a guide. We also wrote to every physician resident in the cities and towns, asking them to use their influence with their respective boards to secure the desired object. But the results have been very meagre and discouraging.

In regard to the statistics we have accumulated we must in candor say that we cannot certify to their completeness in every town, although we believe in most cases they are reliable. The interested reader can refer to the tables and draw his own conclusions.

While our statistics, from a general point of view, may not be of any particular interest or value, we think they are both interesting and valuable as bearing on the comparative death rate in the two races, because of their constancy for a number of years. The total annual death rate was for 1899 14.8 per 1,000—white 11.4, colored 18.7—a difference as against the negro race of 7.3; in 1900, white 13.2, colored 20.1, difference 6.9; average difference for the two years 7.1. Inasmuch as deaths among the negroes are more apt to be overlooked than among the whites, it is probable that the above statement is more favorable to the

colored race than the actual facts would justify. Unfortunately our record of births is so insignificant that we can form no conclusion as to whether the colored people in our towns are positively diminishing or not.

We give below the comparative figures in consumption, pneumonia, malarial fever and diphtheria.

Consumption.—For 1899, white, death rate 1.11 per 1,000 and 1 in 11 of all deaths; colored, 2.35 and 1 in 8. For 1900, whites, 1.18 and 1 in 11.4; colored, 2.00 and 1 in 10. In 1897 the proportion was 1 white to 3.35 colored; in 1898 1 to 2.4. From these figures it appears that the death rate from consumption among the colored people is, in comparison with that among the whites, diminishing, and as the death rate among the whites is also decidedly less than in the preceding biennial period, consumption is materially less fatal among them.

Pneumonia is one of the diseases most fatal to both races. In 1899 the death rate was, white, 0.86 and 1 in 13.2; colored, 1.40 and 1 in 13.3; 1900, white, 1.18 and 1 in 11; colored, 1.63 and 1 in 12.3.

Malarial fever.—Notwithstanding the accepted opinion that the negro is less susceptible to malarial diseases than the white man the mortuary statistics of our towns persistently show quite the reverse, on the surface at any rate, the proportion being about 3 to 1 in favor of the white race. The figures for 1899 are, white 0.20 and 1 in 55; colored, 0.69, 1 in 27. For 1900, white, 0.33, 1 in 39; colored, 1.02 and 1 in 19.6. As suggested in a former report, the above results are probably not so much attributable to greater susceptibility as to the more malarious conditions prevailing in the outskirts of the towns, where the colored people usually dwell, and the lack of the proper treatment and care incident to their poverty as a class.

Diphtheria.—In the Fifth Biennial Report we called attention to the apparent comparative immunity of the negro

to diphtheria, the total number of deaths from this disease in 1893 and 1894 being 22 among the whites, while not one occurred among the colored; in the past two years 19 and 1 respectively. Taking the past eight years, the total number of deaths from diphtheria among the whites was 62 and only 7 among the negroes.

Typhoid fever favors neither race. In the past five years the deaths from this preventable disease were 1 in every 1,717 of the population of the cities and towns reporting. Assuming the rate to have been the same for the whole State, one thousand people die annually in North Carolina from typhoid fever. This should not be, and it is hoped that the enlightened action of the State Board of Agriculture in providing for the free bacteriological examination of drinking water will be the means of reducing these figures. For further particulars the reader is respectfully referred to the following tables:

TABLE I—Showing the Comparative Prevalence of Certain Diseases in the Three Physical Divisions of the State During 1899 AND 1900.

Eastern Division (E)—Alluvial Plain. Central Division (C)—Hilly. Western Division (W)—Mountainous. The figures under the various diseases represent in percentage the proportion of the counties reporting the presence of the disease in question to the whole number of counties sending reports for the month.

			Whole Number Counties,	No. Counties Reporting.	Diphtheria.	Dinrrhoul Diseases,	Influenza.	Malarlal Fever.	Malarial Fever, Pernicious.	Malarial Fever, Hemorrhagic.	Pneumonla.	Scarlatina.	Typhoid Fever.	Small-pox.
	E.	1899 1900	36	27 34	3.7 2.9	0.0	48.1 26.5	18.5 11.8	0.0	7.4 2.9	22.2 26.5	3.7 5.9	44.4 20.6	22.2 26.5
January.	c.	1899 1900	26	20 21	15.0 0 0	0.0	60.0 19.0	0.0 4.8	0.0 4.8	0.0	35.0 38.1	0.0 14.3	20.0 28.6	$0.0 \\ 52.4$
Ja	w.	1899 1900	34	30 31	6.7 0.0	0.0 3.2	46.7 29.0	$0.0 \\ 6.4$	0.0	0.0	23.3 25.8	3.3 3.2	23.3 29.0	3.3 9.7
	E.	1899 1900	36	28 31	0.0	0.0	42.9 35.5	14.3 19.3	3.6 6.4	10.7 3.2	18.0 48.4	0.0 3.2	21.4 9.7	35.7 16.1
February.	C.	1899 1900	26	22 24	0.0	0.0	50.0 16.7	4.5 4.2	· 0.0 4.2	4.5 0.0	31.8 25.0	0.0 4.2	$9.1 \\ 29.2$	13.6 66.7
Feb	w.	1899 1900	34	28 34	7.1 5.9	0.0	67.8 26.5	3.6 0.0	0.0	0.0	39.3 29.4	0.0 2.9	21.4 29.4	3.6 26.5
	E.	1899 1900	36	29 30	0.0	0.0	31.0 56.7	13.8 10.0	3.4 0.0	3.4 6.7	10.3 36.7	3.4 6.7	17.2 20.0	58.6 20.0
March.	c.	1899 1900	26	19 25	0.0 8.0	0.0	42.1 40.0	5.3 12.0	0.0	0.0 8.0	$21.0 \\ 24.0$	0.0 4.0	5.3 36.0	21.0 56.0
M	w.	1899 1900	34	28 31	$\frac{0.0}{3.2}$	0.0	42.9 38.7	0.0	0.0	0.0	21.4 19.3	3.6 0.0	14.3 12.9	3.6 29.0
	E.	1899 1900	36	26 30	0.0 3.3	7.7 0.0	19.2 60.0	23.1 3.3	3.8 3.3	7.7 3.3	7.7 20.0	3.8 0.0	23.1 16.7	26.9 13.3
April.	C.	1899 1900	26	19 23	5.3 0.0	0.0	31.5 36.5	10.5 0.0	0.0	5.3 0.0	5.3 8.7	10.5 8.7	15.7 37.8	26.3 73.9
V	w.	1899 1900	34	28 31	$0.0 \\ 6.4$	10.7 0.0	21.4 61.3	0.0	0.0	0.0	18.0 29.0	0.0 3.2	25.0 9.7	7.1 29.0
	E.	1899 1900	36	27 32	0.0 3.1	66.7 46.5	0.0 21.9	25.9 31.2	0.0	7.4 3.1	0.0	3.7 3.1	40.7 37.5	29.6 9.4
May.	C.	1899 1900	26	22 22	0.0	54.5 40.9	0.0 9.1	13.6 18.2	0.0 4.5	0.0	0.0	0.0 4.5	13.6 31.8	13.6 63.6
	w.	1899 1900	34	29 32	0.0	37.9 31.2	0.0 18.7	3.4 9.4	0.0	0.0	0.0	3.4 0.0	37.9 18.7	13.8 25.0
	E.	1899 1900	36	28 28	0.0	21.4 25.0	0.0 7.1	42.9 39.3	10.7 7.1	0.0 3.2	0 0 3.2	0.0	60.7 35.7	18.0 21.4
June.	c.	1899 1900	26	24 21	0.0	37.5 28.6	0.0 9.5	41.7 23.8	0.0	0.0	0.0	4.2 4.8	70.8 57.1	20.8 38.1
·	w.	1899 1900	34	30 31	3.3 0.0	30.0 35.5	0.0 3.2	10.0 12.9	6.7 0.0	0.0 3.2	0.0	0.0	60.0 58.1	20.0 16.1
July.	E.	1899 1900	36	24 31	4.2 0.0	16.7 6.4	0.0 3.2	66.7 64.5	4.2 6.2	8.3 9.7	0.0	0.0	79.2 74.2	20.8 16.1

TABLE I—Continued.

			Whole Number Counties.	No. Counties Reporting.	Diphtheria.	Diarrheal Diseases.	Influenza.	Malarial Fever.	Malarial Fever, Pernicious.	Malarial Fever, Hemorrhagic.	Pneumonia.	Scarlatiua.	Typhoid Fever.	Small-pox.
· ×	C.	1899 1900	26	22 22	9.1 13.6	13.6 22.7	$\frac{0.0}{4.5}$	50.0 31.8	9.1 4.5	0.0 4.5	0.0	9.1 13.6	81.8 54.5	13.6 31.8
July.	w.	1899 1900	34	30 29	3.3 3.4	20 0 20.7	3.3 3.4	23.3 10.3	0.0	0.0	0.0	3.3 3.4	63.3 79.3	6.7 10.3
	E.	1899 1900	36	26 30	3.8 6 7	3.8 3.4	0.0	57.7 56.7	0.0 3.4	19.2 13.3	0.0	7.7 6.7	76.9 66.7	11.5 10.0
August.	C.	1899 1900	26	23 22	17.4 13.6	8.7 9.1	0.0 4.5	$\frac{56.5}{36.4}$	8.7 4.5	4.3 4.5	0.0	4.3 13.3	87.0 72.7	$0.0 \\ 27.3$
¥	w.	1899 1900	34	24 30	4.1 16.7	4.1 6.7	0.0	20.8 16.7	0.0	4.1 0.0	0.0	8.3 16.7	70.8 73.3	0.0 3.4
<u></u>	E.	1899 1900	36	26 32	7.7 3.1	7.7 3.1	0.0	73.2 78.1	7.7 21.9	30.8 15.6	0.0	3.8 6.2	57.7 53.1	7.7 3.1
September.	c.	1899 1900	26	24 21	12.5 23.8	0.0	4.1 4.8	62.5 61.9	4.1 4.8	0.0 4.8	0.0	8.3 9.5	70.8 85.7	0.0 9.5
Sep	w.	1899 1900	34	28 31	25.0 25.8	3.6 0.0	3 6 3.2	18.0 9.7	0.0	3.6 0.0	·0.0 3.2	7.1 12.9	78.6 58.1	3.6 9.7
	E.	1899 1900	36	27 32	22.2 9.4	0.0	3.7 0.0	63.0 84.4	14.8 28.1	29.6 40.6	0.0	7.4 12.5	63.0 65.6	0.0 3.1
October.	c.	1899 1900	26	23 23	13.0 13.0	0.0	4.3 8.7	52.2 56.5	8.7 0.0	4.3 8.7	0.0 8.7	4.3 26.9	69.7 78.3	13.0 13.0
ŏ	w.	1899 1900	34	27 30	18.5 33.3	0.0 0.0	3.7 3.3	22.2 13.3	0.0	0.0	0.0 6.7	7.4 20.0	70.4 60.0	0.0 3.3
ij.	E.	1899 1900	36	29 32	7.0 9.4	0.0	10.3 3.1	34.5 56.2	3.4 3.1	10.3 28.1	0.0 3.1	7.0 15.6	62.1 59.4	7.0 0.0
November.	C.	1899 1900	26	23 23	13.3 17.4	0.0	4 3 13.3	21.7 39.1	4.3 0.0	8.7 0.0	8.7 0.0	13.3 17.4	60.9 69.6	13.3 17.4
No	w.	1899 1900	34	29 32	17.2 40.6	0.0	10.3 6.2	10.3 9.4	0.0 6.2	3.4 0.0	3.4 6.2	3.4 12.5	65.5 56.2	7.0 12.5
÷	E.	1899 1900	36	32 33	3.1 3.0	0.0	9.4 15.1	21.9 36.4	6.2 3 0	9.4 21.2	21.9 18.2	6.2 6.1	46.9 57.6	18.7 3.0
December.	C.	1899 1900	26	23 23	8.7 21.7	0.0	17.4 21.7	17.4 17.4	4.3 4.3	0.0	34.8 13.3	8.7 13.3	39.1 60.9	21.7 30.4
Dec	w.	1899 1900	34	29 34	17.2 23.5	0.0	3.4 11.8	3.4 0.0	0.0	0.0	7.0 17.6	10.3 23.5	51.7 52.9	13.8 8.8
the	1899	E. C. W.	36 26 34	27.4 22.0 29.0	4.3 7.9 8.5	10.3 8.8 9.0	13.7 17.8 17.0	37.9 28.0 9.6	4.8 3.3 0.6	12.0 2.2 0.9	6.7 11.4 9.4	3.9 5.2 4.2	49.4 45.3 48.5	21.4 13.5 6.9
Averages for the Year.	1900	E. C. W.	36 26 34	33.7 22.5 31.3	3.7 9.3 13.2	7.0 8.4 8.1	19.1 17.2 17.1	40.7 25.5 7.3	7.1 2.6 0.8	12.6 2.4 0.3	13.2 9.8 11.4	5.5 11.2 8.2	43.1 53.5 44.8	11.8 40.0 15.3
Avera	1899 1900	State	. 96	78.4 87.5	6.9	9.3 7.8	16.2 17.8	25.2 24.5	2.9	5.0	9.2	4.4 8.3	47.7 47.1	13.9 22.4

TABLE II—Showing the Comparative Prevalence of Disease During THE YEARS 1899 AND 1900.

	N					EAG		ISE.		TIO:		E
DISEASES.	January.	February.	March.	April.	May.	June.	July.	Angust.	September.	October.	November.	December.
Number of counties that sent in re-{1899 ports (96 counties in the State) {1900				73 81	78 86	82 80	76 82	73 82	78 84	77 85	81 87	84 90
Cholera (chicken) { 1899 }	3	3	1		2 5	2 2	1 1	3	<u>-</u>			2
Cholera (hog) { 1899	2 2	<b>4</b> 2	3	1 1	1 1	2 4	2 4	3 5	1 3	2 5	4	3 6
Diarrhœal diseases	<sub>1</sub>			5 	41 34	24 24	13 13	4 5	2			
Diphtheria {1900	6	2 2		1 3	1		4	6 10	12 14	14 16	10 20	
Distemper (horses) {1899				<u>-</u> 2	2 5	1	4	<u>-</u>			1	
Influenza{1900	39 22	42 24		17 51	- <u></u>	1 5	2	<u>-</u>	2 2	3	7 6	8 14
Malarial fever { 1899 }		6		8	11 17	25 20	34 30	33 30	39 41	35 44	19 30	12 16
Malarial fever, hemorrhagic $\begin{cases} 1899\\ 1900 \end{cases}$	2	4	1 4	3	2	2	2 4	7 5	9	9 15	6	3 7
Malarial fever, pernicious $\begin{cases} 1899\_\_\\ 1900\_\_\end{cases}$	2	1 3	1	1	2	5 2	3	2 2	3 8	6 9	2 3	3
Measles { 1899 }	6 33	10 40		10 39	14 41	7 38	10 26	4 24	2 21	5 19	4 12	12 26
Mumps	3 5	1 5	3 6	3 9	2 3	2 2	2 2	1 3	1 3	1	1 4	1 2
Pneumonia{1900	20 25	22 31	13 23	8 17	9	<u>-</u>	<b>-</b>		<u>-</u>	4	3	17 15
Rabies (in dogs) \ 1899 \ 1900	1	<u>-</u> 2	1 2	<u>-</u>	<u>-</u>		1		1			1
Rotheln { 1899		1 2	1	5 2	2							
Scarlatina { 1899 }		3	2 3	3 3	2	1	3	5 10	5 8	5 16	6 14	7 13
Small-pox	7 23	14 30	20	14 30	15	16 19	10	3 10	3	3	7 7	15
Typhoid fever $\begin{cases} 1899\\ 1900 \end{cases}$		14	10		25 25	52 40	61	57. 58	54 53	52	51 52	39
Varicella{ 1899 1900		1						2	2			
Whooping-cough { 1899	1	11	9	6	11	14	20	16 26	11 22	13	14 20	12

TABLE III-TABLE OF MORTALITY REPORTS FOR YEAR ENDING DECEMBER 31, 1899.

-1ate .(006	disəU laioT I suenəO)	12.9	13.6	13.2	16.3	17.6	15.6	10.8	14.3	9.5	16.5
noita .(009	luqoq (stoT [ enen90)	1,694	27,752	6,679	4,670	3,746 17.6	707	1,296	1,116	2,427	2,059 16.5
ATION. ATEOF TERE),	By Towns.	13,000	29,000	6,000	6,000	4,250	200	1,500	1,200	2,400	2,300
POPULATION. (ESTIMATE OF REPORTERS)	Ву Васев.	8,000	19,176 9,824	4,000	3,500	2,250	300	1,250	9 S	9.3 -	1,300
KATE FOR YEAR.	.sawoT yd	97.	13.0	7.4.	12.7	15.5	15.7	9.3	13.3	9.6	10.0 11.7 14.8 32.7 18.2 14.8
3.2	Ву Васев.	20.0	19.2	18.5	9.7	12.0 29.5	17.5	16.0	15.0	15.0	11.7
	December.	10.5	3.1	9.9	6.8 10.3 19.2 14.4	16.0 12.0	0.0 60.0 40.0 0.0	9.6 38.8	0.0	0.0	21.8 43.6 10.9 20.0 30.0 10.0 10.0 10.0 10.0 21.7
MONTHS.	Zovember.	10.5	× 51	3.0	6.8 19.2	5.3	40.0		0.0	13.3 13.3	10.0
Mo	October.	6.6	6.2 28.1	7.5	6.8 19.2	16.0 18.0	0.0	9.0 0.0	0.0		10.0
0, 181	September.	5.2	20.3 16.9 29.0 23.3	6.0	28.83 8.83	32.0 5.3 12.0 30.0	0.0 60.0 30.0 40.0 0.0 0.0	0 0	0.0	6.7	2 5
в 1,00	4ugust.	10.5		0.15.0	19.2	22.2		9 8 8 8	15.0	6,7	9.5
DEATH-RATE (ANNUAL) PER 1,000, BY	July.	19.5 12.0 19.2 19.2	15.4 16.1 29.3 20.0	0.12	6.8 13.7 10.3 9.6 24.0 19.2	10.7	0.0	9.6	30.0	13.3	20.0
NUAL	June.			36.0		7 10.7	30.0 30.0 30.0 40.0 0.0 0.0	96.0	15.0	40.0	2.01
(AN	May.	36.0	5.6 13.3 6.0 18.7	5 12.0 0 36.0	8 2 2 6 8 2	7 26.7 0 18.0	0.0	0.0	0.00	20.0	3.0
-RATE	A pril.	10.5	_	0.7.5	19.68	3 10.7 0 0.0	0.0 0.0 0.0	0.0	0.0	6.7	32
EATH-	March.	0 15.0 2 26.4	3 8 E	0.24.0	13.7 10.3	30.0	0.0	0.0	30.0	0.03	0.0
ā	February.	4.5 2.0 43.2	3.5 9.3 28.0	0 18.0		0.0 5.3 3.0 42.0	0.0 0.0	9.6 19.2 0.0 0.0	0 15.0	7 13.3	0 10.0 9 10.9
	January.			\$ 6.0			0 0 ===================================		16 30.0	3 20.0	10.0 10.0
1	Grand Total.	8	377	88	22	8		Z		X = 2	F - 0
.668	December. Total by Races.	3 1 30 1 30	5 187 14 190	2 H	2 3 4 3 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	2 2 2 3 2 4 2 4 2 4 2 4 2 4 2 4 2 4 2 4	210	0 4			1 0Z
Моктив-1899	November.	1~ ·c	ΞΞ	- 4	21 4	- 31	0=	-=	0.0	21 ~	- m
<u>e</u>	October.	40	28	m o	24 <del></del>	- m m	- c -	-0	-0	21 -	
Y.	September.		× 6	±	21.0	- 9	2) 0	0 0	00	- 21	
ş	August.	55	29 28 22 19	·c -	65.4	G 21	0 =			-0	22
<u>&gt;</u>	July.		24.53	1-4	40	01 01	00		c -	210	21 21
80	June,	_ ∞ ∞	22 23 22 23	- 0	21.21	21 4	-0	C 01	-0	→ 01 °	
E	May.	30 10	2 =	40	¢1 4	30	-0	00	es 0		-4
DEATHS BY		P- 9	8 Z 8 Z	20.01	014	010			0	0	H 01
-	Матећ.		22	01 77	₩.4	- 10	00	2 2	24.0	°-	00
	February.	υ×	2 2	3 1-	4-	7	00	24.0	10	010	
	January.	63.40	5. L-	7	· -	0 7	00	- 0			
	Влскв.	) ಕ್ರ				≅:5	≥::	≽. ೧.	≱∵	¥:3	5.5
	TOWNS AND REPORTERS.	Asheville Dr. M. H. Fletcher	Charlotte Dr. F. O. Hawley.	Durham Dr. Z. T. Brooks.	Fayetteville	Dr. W. J. Judd.	Hillsb ro br. C. D. Jones.	Lenoir	Marion	Monroe Dr. J. M. Blair.	Oxford

TABLE III—Continued.

9181- (000)	Total Death Tensus)	17.9	12.6	6.8	13.9	9.6	13.6	26.6	9.1	6.55	28.1
.(006	Inqod lstoT I susneO)	13,643 17.9	2,937	3,642 18.9	6,277	1,348	2,499 13.6	4,842	1,433	20,976	3,525
POPULATION. ESTIMATE OF REPORTERS).	By Towns.	20,000	2,600	4,550	000'6	1,200	3,000	000'9	1,450	27,000	4,800
Population (Estimateo Reporters)	By Races.	9,000	1,600	4,100	3,000 3,000 5,000	775 425	1,000	2,500	700	12,000	2,500
RATE FOR YEAR.	By Towns.	5i 5i	6:5	15.2	9.7	8.01	11.3	21.5	9.0	17.8	20.6
× × ×	Ву Вясев.	13.3	17.5	15.1 17.8	17	10.3	16.0	55 55	9.8 9.8 8.6	14.6 24.0	14.4 27.4
	Бесетрет.	2.8 17.3	15.0	11.7	0.55	0.0	6.0 9.4.0	17.1	0.0	16.0 16.0 16.0 23.2	0.0 19.2 31.3 41.8
Моктив	November.	8.0. 8.0.	15.0	8.0 0.0	0.0	15.5	0.0	6.9	34.3		
	October.	19.6	30.0	0.0	992	9.9	12.0	20.6 10.3 23.2 28.8 2	0.0	13.0	9.6 14.4 31.3 26.1
00 <b>,</b> B.	September.	13.0	24.0	5.8	3.0	0.0 15.5	18.0	2.8	0.0	18.5 14.2 12.0 18.6	
к 1,0	ysn8ny.	8.0	15.0	5 14.6 7 26.7	9.0 12.0 10.0 18.0 24.0 8.0		0.0	3 0 17.1 32.0 33.6	0.0	0 18.5 5 12.0	4 24.0 8 26.1
DEATH-RATE (ANNUAL) PER 1,000, BY	այր.	3 12.0	5 30.0	6 20.5		5 31.0	0.09	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	0.032.0	24.0 11.0 24.8 21.6	8 14.4 3 20 8
NUA	June.	7 14.2 8 21.3	0 22.5 0 24.0	11.7 17.6 14.6 0.0 53.3 26.7	9.0 18.0 24.0 24.0	0.0 15.5 15.5 0.0 0.0 56.5	46.1 18.5 0.0 40.0	8.0 6.8 34.3 33.6 14.4 57.6	1 17.1 0 16.0	142	8 28.8 7 31.3
в (А:	Vall	11.3 12.7 16.0 12.8	0 15.0	11.7 17.6 0.0 53.3	6.0 9.0 24.0	0.0	18.5 46. 0.0 0.	_0_ 6_14.	0.0 17.1 0.0 16.0	3 20.7	0.0 28.8
-RAT	- lingA	2.8 11.3 17.6 16.0	15.0 15.0 15.0 0.0 12.0 12.0			15.5	10.0 9.2 0.	12.0 28.8 33.		13.1 15.3 20.1 22.4	4.8 0.0 26.1 14.3
EATH	March.	12.8 17	15.0 0.0		12.0 3.0 30.0 42.0	0.0	20.0 10 18.5 9	0.8	0.0 16.0 16.0	14.2 13 16.2 20	19 2 5.2 26
G	February.	22.6 16.0 12	15.0 15	17.6 11.7 0.0 0.0	18.2 36.0 30	0.0	0.0 20	12.0 16.0 19.2 28.8	0.0	10.8 14 15.2 16	9.6 19 36.5 5
_	Total.	31 E	37	- 68 - 68	36 36		<u>~</u>	129 19			- 66
	Races. Grand	- 8 - 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	- <del>2</del> 5 5 5 5	8	<del>2</del> <del>2</del>	20 40	20 20	46 83 12	7.0	175 481 306	98 89
MONTHS-1899.	Total by	22 22	- 07 O	4 [	10.00	0.0	- 01	40 00	00	16 29 30	4 %
7	November.	တပ	-21-	20	00	0	0 -	01 <sup>(2)</sup>	21 —	9 8	0 9
81		1 21 G	4-	್≎	ಬ ಬ	50		က္သ	00	200	20
LNC	September.	13 13 11 12 18 16 9 6 9 14	_ 01	61.0	10 21		e:	ာတ	50	25 25	010
ž	August.	123	210	5	9 9	°-		-10	-0	22	50.50
DEATHS BY	July.	1 22 0	<del>-</del> <del>-</del> <del>-</del> -	r	33.33	Ç1 —	2 01	<b>→</b> ∞	0 03	1.51	ಬ್ಕ
<u>oc</u>	June.	5.3	00 01	r:		- 51	01 <del>+</del>	3 13		33 53	ဗဗ
- F	May.	G. 20	31	© 31	ಣ →	-0	60			26	ယသ
DE	April.	x 5	01 -	<b>→</b> ≎	01 D	00	210	-110	00	12 14 26 29	0 61
	March.	° =	C1 C	63.53			~-	ကဗ		212	- 2
	February.	16 tl	0.0	9 C	99	0 0	63 61	4.0	0 =	22	7-
	January.	1					00	00 <del>1</del>	00	61	-110
	RACES.	કુંઇ			≥ 0	≱ೆ ಲೆ	≱ ಬ	≱::	ತ್ತ:	ಕ್ರವ	ಕ್ಷ. ಬ
	Towns and Reporters.	Raleigh T. P. Sale, Clerk B. H.	Rocky Mount	Salem S.E. Butner, Mayor.	Salisbury	Scotland Neck	Parboro Dr. L. Estaton.	Washington Dr. P. A. Nicholson.	Weldon J. T. Gooch, Mayor.	Wilmington Dr. W. D. McMillan.	Wilson Dr. W. S. Anderson.

TABLE No. IV-Table of Mortality Reports for Year Ending December 31, 1900.

	Total Death. (Census 19	15.8	13,3	16.5	17.8	4.4	Н.1	7.7	15.2	4.7	16.5	22.5
.(006	Total Popula Rensus I	14,694 15.8	27,752 13.3	6,679 16.5	5,877 17.8	3,746 14.4	707 14.1	1,296	1,116 15.2	2,427	2,059 1	3.643
	By Towns.	13,000		000,9	8,000	4,250	200	1,200	1,200	94.0	2,300	20,000 13.643
POPULATION. ESTIMATE OF REPORTERS).	By Races.	8,000	19,176	4,000	4,500	2,250	300	300	808	1,800	1,300	0000
E 8 8	By Towns.	17.8	12.7	18.3	15.0	5 5	14.3		2.5	7.5	13.0	15.3
. RATE FOR YEAR.	Ву Вясев.	15.9	9.2	20.5 14.0	8.4 26.8	0.55	12.5	13.3	13.7	6.7	13.7	7.12
	Бесешрег.	12.0 31.2	8.8	15.0 12.0	9.6	10.7	0.0	0.0	0.0 15.0 45.0 15.0 15.0 30.0 15.0 0.0 0.0	E 0.0	32.7	9.6
MONTHS.	Хотетдег.	16.5 19.2	2.6	24 0 18.0 15.0 12.0 6.0 12.0	8.4.8 8.6	5.3	0.0	5.0	30.0	6.7	0.0	12.0 13.1 19.6 16.4 13.1 19.6 10.9 18.7 21.3 32.0 94.0 18.7 21.3 13.3
	October.	19.5 21.6	18.1 25.9		27.27	5.3	0.0	3.0	15.0	13.3	20.0 32.8	19.6
), ву	September.	16.5	5.5 6.8	21 22 0.00	14.4	0.0	0.0	13.3	15.0	20.02	10.0 0.01	13.1
1,000	yagast.	18.0	8.8	3.0	12.0 4.8 20.0 16.0	10.7 24.0	30.0	0.0	45.0 60.0	0.0	30.0	16.4 24.0
DEATH-RATE (ANNUAL) PER 1,000,	July.	15.0 28.8	9.4	27.0 12.0		21.3 10.7 24.0 24.0	0.0 80.0	10.0 0.0	15.0 30.0	13.3	10.0 21.8	19.6 32.0
UAL)	·əunç	19.5	20.52 20.83	9.0 15.0	9.6 52.0	35.0 6.0	0.0	30.0	2.3	6.7	10.9	13.1
ANN	.yek	22.5	E 83	0.6	7.2	5.3	0.0	10.0	30.0	6.7	0.0 0.0	12.0
ATE (	April.	18.0 38.4	18.4 18.4	0.51 0.51	4.8 28.0	26.7 6.0	30.0	9.6	30.0	0.0	20.0	6.5 12 0 8.7 12.0 14.7 12.0 18.7 18.7
TII-R	Магећ.	13.5 9.6	5.53	42.0 21.0	7.2 16.0	6.0	0.0	0.0	0.0	40.0	0.0 21.8	0.21
DEA	February.	1.5	6.2 18.4	18.0	24.0	5.3	0.0	9.6	30.0	9.02	0.0	6.5
	January.	19.2	16.2	24.0 6.0	12.0	5.3	30.0	0.0	0.0	0.0	0.02	10.9
	busito Total.	133	370	110	105	53	10	10	17	18	34	307
0	Total by Races.	127 105	174	22.82	38	27	5.0	9#	11	219	14	140
Моктнѕ—1900	December.		29 15 11	10 01	4.01	010	0 0	0.0	0.0	0.0	0 80	G 80
8			- 22	∞ 31	20 00	- 22	0.0		75	-51=	0.0	6 11 8 11 12 18 15 12 18 10 11 9 14 14 16 24 18 14 16 10
E		8 9	Ø €	G #	2.0	09	00	-0		0	4-	27.2
Mo		12 15 13 10 12 11 16 10 3 12 8 8	16 18 16 15 14 8 15 17 17 14 13 20	65	01 4	214		00	00 01	20.00	०३ च	5 00
BY		22	6.4	S 01	5 5	4 4	0.01	7 0		21.0	- 3	× 7
m m		120	2 1-	10 00	4 23	. 9 -	010	0.	0	-0	0-	6 2
THE		125	2.0	22 09	e: 0	-0	0-	- 01	0.1		0	4
DEATHS		212	2.0	00 01	C1 L→	5-		~0	0 -	00	7.7	8 4
	March.	0.4	∞ ∞	44	<b>23.4</b>	≈ ⊢	00	0-	00	C 01	0.03	- 6
	rebruary.	6.5	0.5	90	19	- 4	00	-0	010	0-	0 81	-91
	January.	00 00	4 10 18 1 13 15 18 1	∞ <del>-</del>	25.53	- 00	0	00	50	0.0	0.0	13 11
	RACES.	) કંડ	. ಬ	S. S.	ĕ. c.	Ğ.		.:		C.K		 ≥::
	Towns and Reporters.	Dr. C. V. Reynolds.	Dr. F. O. Hawley.	Dr. Z. T. Brooks.	Goldsboro	Henderson Dr. F. R. Harris.	Dr. C. D. Jones.	enoir	Dr. B. A. Cheek.	onroe	xford Dr. S. D. Booth.	P. Sale, Clerk B. H.
	To	Ashe Dr.	Charlotte Dr. F. U	Durham Dr. Z.	Golds	Hend Dr.	Hillsboro Dr. C. D	Lenoir. Dr. A.	Marion Dr. B	Monroe Dr. J.	Oxford Dr. S.	Raleigh T. P.

TABLE IV—Continued.

O	_	<b>Деатив</b> в	ву Мо	Молтня—1900	-1900			DE	DEATH-RATE (ANNUAL) PER 1,000, BY	ATE (	ANN	341.)	PER	,000,		Monties.	œ.	_	FOR YEAR.	Est.	ESTIMATE OF	noite	etrate
May. June.	July.		August. September.	October.	December.	Races.	Total.	February.	Матер.	April.	May.	June.	· Kint	yagast.	September	October.	Zovember.	December.	By Races. By Towns.	Ву Касев.	By Towns.	Inqo¶ IstoT f susnaO)	dired lato'T
1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	-0		100		100	5 ∞   51	27 72.0	0 8.0	0.0	8.0 0.10	8.0	0.0	0.0	40.0	∞ ° ° °	S.0.	0.0	8.0 1	16.0 13.5	1,500	2,900	1,507	97 70
0 1 0 1 0 0 0 0 0 1 1 1 1 1 1 1 1 1 1 1	100			21.0	9 C	25	34 15.0 21.0	0.0	0.0	0.0	0.5 0.0	24.0	0.0	0.51	6.5	0.0	30.0	0.0	13.1	900,	2,600	2,937	37 11.6
7 7 6 3 3 1 1 2 0 0	8 C			\$- -	m 0	12 7	73 14.	14.6 17.6 26.7 26.7	3 26.3	20.5	20.5	17.8 53.3	x 0.0	8.8	26.7	14.6	x 0 x 0	8.8	15.0 26.7] 16.0	4,100	0 4,550		3,642 19.8
6 8 8 2 2 8 6 6 6 6 6 6 6 6 6 6 6 6 6 6	8. 3) 6. 3) 5. 5.			10 m	m m	2 2 2 3 3	111 18.0	0.03	16.0	) 12.0 ) 24.0	6.0 0.05	0.0°	0.51 0.45 0.45	0.08 0.09			0.5	0.0 0.0 1	9.2 12.3	000'5	9,000	6,277	7.71 77
0 0 1 1 1 0 3	20	m 0		- 0	0 0 1	21 1-	15 35.	35,5 0.0 0.0 28.3	15.5	3 0.0	0,0	28.20 0.82	31.0 15.5 28.3 28.3	£6.0	31.0 15.5 0.0 0.0		0.8	24.0	15.5 16.5 16.8	426	5 1,300		1,348 14.1
1 1 0 1 1 0 1 1 0 1 0 1	1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	- 21		1 0 0	210		15 0.	0.0 6.0	0.0	6.0	0.0	0.57	0.9	0.25	0.0	0.0	3.3	0.51	10.0	00°5 00°5	002,500	2,439	6.0
014 8 8 0 2 0 2	01 4 8 8 0 2			7 7	01 9	- 68 - 68	S0 13.	13.8 13.8 9.6 19.2	2 10.3 24.0	3 3.4	6.8 19.2	5.4 2.4 3.4	17.1 9.6	6.9 F.4	9.05	13.7	9.6	8.8.8	11.7 13.3	2,500	9 0	2.8.2	16.3
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	01 O			0 21	0 0	15 2	92 32.0	0.0 17.1	9 27	0.0	표 0 전 0 0	25.0 2.0 2.0	0.0 0.5 0.0	17.1		0.0 0.0 16.0 16.0 32.0	0.0	0.0	10.0 20.0 15.1	700	0 1,450	1,433	33 15.3
26 27 20 18 37 31	27 20 37 31	35	21	28 37 2 49 29 3	25 19 31 33	256 360 616		15.0 10.0 16.8 21.6		20.0 13.0 16.0 18.4 17.6 31.2	31.2	26.3	27.0 18.3 2 29.6 24.8 3	18.3 24.8	20.00	83.7.0 13.10	25.0 19.0 21.8 26.4		21.3 24.0 22.8	12,000	9 27,000	20,976	76 29.4
5 7 6 2 2 6 6 11 4 6	7 6 6 11 4			6 0 10	51 10	56 12	128 19.2	28.8	31.3	3.13	33.6	28.8 57.4	9.6 30.9	9.6 15.6	39.3	43.2 9.6 52.2 15.6		9.6	22.4 31.3 26.6	2,500	0 4,800	0 3,525	25 36.3

TABLE V-Showing Causes of Death for Year Ending December 31, 1899.

	Total Death-rate (Census 1900).	12.9	13.6	13.2	16.3	3,746 17.6	15.6	10.8	14.3	9.5
1	Total Population (Census 1900).	14,694	27,752	6,679	4,670	3,746	707	1,296	1,116	2,427
	Still-born.	21 %	55 <del>z</del>	SC 24	- 31	0 9	cc	610	0.0	00
97	Deaths Under F	8.2	£ 89	51.0	15	≈.⊏	-=	21 0	c: 0	00
AL FHS.	By Towns.	3.	377	8	76	99	=	7	16	83
Toral Deaths.	Ву Вясез.	3.2	187	52	2 4	3.52	1-4	3.4	11	14
	Violence.	00	00	00	00	c <b>c</b>	C C	<b>-</b> -	= 0	0 5
	Suicide.	00	00	00	00	CO	00	00	-0	0 0
	Accident.	0.1 50	-2.5	- 22	0.31	c -	- 0	81 C	CC	00
es.	All Other Diseas	44	101	25 14	17	E 9	<b>23 53</b>	m C	m -	23.10
.ses.	Diarrhæal Disea	27	22.53		0 9	9 4	21 0	00	0	00
*8	Zeurotic Disease	44	0.	<b>-</b> 0	21	00	00	Ç.	<b>-</b> 0	0 0
	Heart Diseases.	75	-4.5		11 9	G 0	<b>c</b> c	m o	0.0	2.0
	Brain Diseases.	==	40	-0	0.0	4-	00	H C	₹0	0.0
	Consumption.	4 12	21	40	3 6	11	c c	C 61	00	4-
	Pneumonia.	1-10	15	× 1-	es	- m	-=	-0	- C - C	00
-	.səlasəll	00	00	00	00	00	CO	00	0.0	00
	ηγοορ:βαiqood <i>™</i>		6) C	00	0 -	c c	0.0	c c	o c	00
	Diphtheria.	-=	0 0	-3	00	- 0	cc	00	0.0	40
Malarial Fever.		00	<u> </u>	4 83	61.0	0.0	0 1	0 0	0.0	ငက
	Searlet Fever.	-0	c c	-00	C C	00	00	00	00	00
	Typhoid Fever.		8	<u> </u>	00	1 3	0.0	٥-	21 22	610
RATE	.lato'T	14.6	13.0	14.7	12.7	15.6	15.7	9.3	13.3	9.6
ANNUAL DEATH-BATE PER 1,000.	Ву Вясев.	20.02	19.2	12.7	9.7	12.0 29.5	17.5	16.0	15.0	7.8
ATE OF FERS).	Total.	13,000	29,000	000,9	6,000	4,250	700	1,500	1,200	2,400
Population. (Estimate of Reporters).	Ву Касев.	8,000	19,176 9,824	4,000	3,500	2,250	300	1,250	800	1,800
	RACES.	White.	White.	S White.	Swhite.	White. Colored.	White. Colored.	White.	White. Colored.	White.
	Towns.	Asheville	Charlotte	Durham	Fayetteville	Henderson	Hillsboro	Lenoir	Marion	Monroe

TABLE V—Continued.

	(Census 1900).	16.5	17.9	12.6	6.81	13.9	9.6	13.6	26.6	9.1	22.9
	Total Populatior (Census 1900). Total Death-rate	2,059 1	13,643	2,937 1	3,642 1	6,277	1,348	2,499 1	4,842 2	1,433	20,976
	Still-born.	61 51	4 12	0.0	o 10	<del>-04</del> -	00	0	00	0 80	19
9.71	Deaths Under F Years.	, Or .C.	<b>\$ 4</b>	<b>ာ</b> ၃၅	1	15	91 m	00	16	1 2	50
	By Towns.	ភ	244	37	69	87	13	34	129	13	481
TOTAL DEATHS.	Ву Васев.	20 14	124 120	928	8	<del>\$</del> <del>\$</del>	× 10	18	46 83	-10	175 306
	Violence.	00	01	00	00	0.0	00	00	00	00	00
,	Suicide.	00	00	00	c s	0.0		0 5	00	0	
	Accident.		Ć m	0.5	00	03 m	0 =	00	01	00	9 6
.ses.	All Other Diseas	75	8.8	r- m	5	14	0	G G	18 32	4	131
*səsı	Diarrhæal Disea	L 31	118		-0	18	e: 0	C 51	11.5	00	11
'sə	Neurotic Diseas		0		00	0	00	cc	00	0 0	es
	Heart Diseases.	e	oc oc	80	e 0	470	0	C) C)	62 63	00	44
	Brain Diseases.	- 2	11	er o	00	9 -	0	00	-1-1	00	3
	Consumption.	024	17	- 22	∞ c₁	9	0 1	C 01	4.21	00	8 42
	Pneumonia.	C 01	217	21 21	9	ec ac	213	€:	∞ <del>4</del>		17
	Measles.	00	00	00	00	00	00	0	00	00	00
	Whooping-coug	00	H 0	00	S S	<b>-</b> = =	0.33	81.0	C 21	00	00
	Diphtheria.	00	0	-0	00	0	0.0	00	00	00	40
	Malarial Fever.	30	1	21 0	0	20	00	00	၁၈		17
	Scarlet Fever.	20	00	C =	0.0	0.3	00	0.0	0.0	00	00
	Typhoid Fever.	S1 S	- m	210	210		-0	10	- 2	00	2 3
JAL BATE 000.	Total.	14.8	19.9	14.2	15.2	9.7	10.8	11.3	21.5	9.0	17.8
ANNUAL DEATH-RATE PER 1,000.	By Races.	11.7	11.3	9.0	15.1	7.3	10.3	16.0	13.1	9.3	14.6
TION.	Total.	2,300	20,000	2,600	4,550	9,000	1,200	3,000	000'9	1,450	27,000
Population. (Estimate of Reporters).	Ву Касев.	1,200	11,000	1,600	4,100	3,000	425	1,000	3,500	700 750	12,000
	RACES.	White.	White. Colored.	White. Colored.	White.	White. Colored.	White, Colored.	White.	White.	White.	White.
	Towns.	Oxford	Raleigh	Rocky Mount.	Salem	Salisbury	Seotland Neck,	Tarboro	Washington	Weldon	Wilmington

# TABLE V-Continued.

	(Census 1900)	28.1	16.6	
	Total Population (Census 1900). Total Death-rate	3,525 2	26,268 1	
	Still-born.	==	2 3	
241	J 691.8°	128	1 2 2 E	
	By Towns. Deaths Under F	8	2101	
TOTAL DEATHS.	Ву Васев.	8.8	1661	[E]
	Violence.			31
	Suicide,	==	91.0	2,1
	Accident.	031	8 8	75
.89.	All Other Diseas	35	583 589	1072
.ses.	Diarrheal Disea	20.0	25.55	194
.89	Zeurotic Diseas	° -	25	255
	Неаті Dізеязез.	24.4	66	115
	Brain Diseases.	e: -	31.8	99
	Consumption.	20	05 P	230
	Pneumonia.	5	83	158
	Measles.	- =	01 0	31
·t	Whooping-coug	00	5 6	=
	Diphtheria.	00	22	1
	Malarial Fever.	4 83	8 ÷	8
	Scarlet Fever.	55	=	
	Typhoid Fever.		25.22	8
ANNUAL EATH-RATE PER 1,000.	Total.	20.6	14.8	
ANNUAL DEATH-RAT PER 1,000.	Ну Вясев.	14.4	11.4	
OPULATION. SSTIMATE OF ERPORTERS).	Total.	4,800	145,950	
Popul (Estin Repor	Ву Касев.	2,500	86,551 59,399	145,950
	RACES.	White.	White. Colored.	
	Towns.	Wilson	Total 20 towns	Grand total

TABLE VI-SHOWING CAUSES OF DEATH FOR YEAR ENDING DECEMBER 31, 1900.

	Total Death-rate (Census 1900).	15.8	13.3	16.5	17.8	3,746 14.4	14.1	7.7	15.2	7.4	16.5
	Total Population (Census 1900).	14,694	27,752	6,679	5,877	3,746	707	1,296	1,116	2,427	2,059
	Still-born.	25 E	17	00	00	G1 65	ော	0.1	- 27	00	- 67
94	Peaths Under Fir	34 16	21	25.5	91	12	0		00	00	10
	By Tewns.	535	370	110	105	53	10	10	17	18	34
Total Deaths.	By Races.	127	174 196	8 22	38	27	c co	9 4	111	120	21.8
	Violence.	00	00	00	0 =	00	00	၁၁	00	00	0 1
	Suicide.	S-F	===		- 0	00	20	00	100	00	00
	Accident.	r- m	st 00	0.0	61 0	0 0	0.0	00	00	00	0.61
·8	All Other Disease	58 49	114	12	927	8 16	61.4	0	01 01	6.01	13.8
.sə	Diarrheal Diseas	22	12	£ 4	10	0.61	0		0	0.03	0.0
•	Neurotic Diseases	21 21	0	00	1	01 01	-0	0	40	00	0
	Heart Diseases.	20.00	-1 œ	1	9 23	-0	00	0.67	0	0.0	0 67
	Brain Diseases.	∞ œ	61 61	N C	05	e: <del></del>	0	00	00	0,	e 0
	Consumption.	4.00	16	14	14	21 -	0.0	10	00	00	
	Paeumoaia.	5.5	11 %	3 5	33.10		00	- 12	10	-0	00
	Measles.	21.0	90	0	0	0.1	00	00	00	00	0
	Whooping-cough.	ıc I	1 0	00	00	C 0	00	00	0 0	co	00
	Diphtheria.	00	6.0	- 0	5 5	C S	00	00	00	00	00
	Malarial Fever.	3-	01.00	61	ಣ ಣ	0 0	0.0	00	00	00	00
	Scarlet Fever.	00	10	00	- C C	00	0	-00	0	00	00
	Typhoid Fever.	1-21	5 6	40 m		12	0.7	61 0	40	0	00
JAL RATE 000.	Total.	17.8	12.7	18.3	15.0	12.5	14.3	8.3	14.2	7.5	13.0
ANNUAL DEATH-RATE PER 1,000.	Ву Васев.	15.9	19.2	20.5	8 4 26.8	12.0	12.5 16.7	6.7	13.7	10.0	11.7
		13,000	29,000	0,000	8,000	4,250	700	1,200	1,200	2,400	2,300
POPULATION. (ESTIMATE OF REPORTERS).	Ву Касев.	8,000	19,176 9,824	4,000	4,500	2,250	400 300	300	800	1,800	1,200
	RACES.	White.	White.	White.	White.	White.	White.	White.	White.	White.	White.
	Towns.	Asheville	Charlotte	Durham	Goldsboro	Henderson	Hillsboro	Lenoir	Marion	Monroe	Oxford

TABLE VI—Continued.

	(Census 1900).	l rc	e,	9	œ	r:	-	ę.	ri,	es.	~
	Total Death-rate	22.5	7 17.9	7 11.6	8.61	7.71 772,9	8 14.1	— 6. — 6.	16.3	3 15.3	6
Ţ	Total Population (Census 1900).	13.643	1,507	2,937	3,642	6,27	1,348	2,499	21 26 7	1,433	20,976 29.4
	Still-born.	2 E		00	9 -	+ 0	. = =	00		00	65
ЭЛІ	Deaths Under F Years.	28		φ 5	50	3.5	to 51	- 0	01 0	24 53	82
	By Towns.	307	61	Ŧ	3	Ξ	19	15	- 32	31	919
Torat Deaths.	Ву Касев.	75	= ×	22	52	55	21 1-	် ဝေ	<b>7</b> 8	15	360
	Violence.	0-	C =	= 0	==	00	00	00	00	00	້ວ ວ
	Suicide.	22	00	S S	3 3	S 9	S <b>S</b>	00	e e	= =	00
	Accident.	21 21		-0	=	4.0	0.0	21	- 5	<b>\$</b> \$	9 [
·sə·	All Other Diseas	85	÷	r- ÷	¥ 20	19	to 01	- 8	# 2	n s	110
ses.	BeitTheal Disea	12	m =	- 21	မာ	-100	61	m =	x r-	- 0	25.25
.86	Neurotic Disease	57	0 5	0.0	2.5	- 3	00	===	00	= =	= 2
	Heart Diseases.	==	0	70	01 O	41-	3 3		22 23	÷ =	∞ ത
	Brain Diseases.	15		21 C	0.0	e	= <b>=</b>	0.0	÷ 4	0.0	2,5
	Consumption.	25	40	C 4	1	∞ င.		0	က်တ	==	28 28
•	Pneumonia.	101-	25 65	n c	5	4 x	01.01	0		01.01	12.5
	Measles.	1-3	0 =	-5.5	°	00	- 0	55	00	3 3	-0
	Mhooping-cougl	21 21	- 0	= 0	==	00	00	=0	33	C 59	==
	Diphtheria.	100	~ = =	2.2	55	10	00	00	10	00	00
	Malarial Fever.		00	00	0.0	00	21	0.0	0.81	-0	67
	Scarlet Fever.	00	5 5	0	= 0	00	00	00	20	S S	0
	Typhoid Fever.	∞ 51	-0	e:	0	202	100	35	54.65	00	0.7
ANNUAL DEATH-RATE PER 1,000.	Total.	15.3	13.5	13.1	16.0	12.3	15.8	6.0	13.3	15.1	22.8
ANNUAL DEATH-RAT	By Races.	11.7	12.7	13.1	15.0	9.2	15.5	10.0	11.7	10.0	21.3
POPULATION. ESTIMATE OF REPORTERS).	Total.	20,000	2,000	2,600	4,550	9,000	1,200	2,500	000,9	1,450	27,000
POPULATION (ESTIMATE OI REPORTERS)	Ву Касез.	9,000	1,500	1,600	4,100	3,000	775 425	2,000	3,500	700	12,000
	Влскв.	White.	White.	White.	White. Colored.	White.	White.	White.	White.	White.	White.
	Towns.	Raleigh	Rockingham	Rocky Mount	Salem	Salisbury	Scotland Neck.	Tarboro	Washington	Weldon	Wilmington

TABLE VI—Continued.

	Total Death-rate (Census 1900).	36.3	18.5	-
	Total Population (Census 1900).	3,525	128,982	
	Still-born.	   = 0	101	168
	Deaths Under Fi	127	355	17
	By Towns.	158	2391	-
Total Deaths:	Ву Васев.	56	173	2391
	Violence.	0 1	5.1	23
	Suicide,	00	2 -	ಣ
	Accident.		88	55
*88	ssesiU TediO IIA	38	523 631	1154
.898	Diarrhæal Disea	0.00	138 121	259
.8	Neurotic Disease	21	38	55
	Heart Diseases.	12	23	109
	Brain Diseases.	210	33	06
	Consumption.	1-00	103	224
	Pneumonia.	0000	95 8	305
	Measles.	00	ET 7	11
	Whooping-cough	100	1 0	6 19
	Diphtheria.	106		
	Malarial Fever.	100	8 3 0	2 92
	Scarlet Fever.	100		
	Typhoid Fever.	1	36.88	8
ANNUAL EATH-RATE PER 1,000.	Total.	26.0	16.	
ANNUAL DEATH-RA PER 1,000	Ву Касев.	22.4	13.2	
OPULATION. SETIMATE OF	Total.	4,800	149,150	
Popul. (Estin Repor	Ву Касея.	2,500	88,701 60,449	149,150
	RACES.	White.	White.	
	Towns.	Wilson	Total 21 towns	Grand total

# SMALL-POX.

Small-pox has been very prevalent in the State during the past two years and increasingly so to a very marked degree. According to the tabulated statements of the disease made for the annual meetings of the Board in May the number of cases and deaths from the first case, which occurred in Wilmington on January 12, 1898, to May 1, 1899, was 616 in 38 counties; 162 white and 554 colored. with 8 and 9 deaths or 4.93 per cent. and 1.97 per cent. respectively, the average death rate for both races being 2.76 per cent. For the twelve months from May 1, 1899, to May 1, 1900, the total number of cases was 2,806 in 55 counties, 731 white and 2,075 colored, total number of deaths 65, 35 white and 30 colored, or 4.78 per cent. and 1.44 per cent. respectively, the average death rate for both races 2.31 per cent. Subtracting the total number of cases occurring in the calendar year 1898, which was 137, and adding the number of cases occurring since May 1, 1900. to January 1, 1901, which was 732, it appears that the grand total of cases occurring in the two years covered by this report was 3,017.\*

The management of the disease, from the preventive point of view, has been quite difficult, owing to its mildness, to the prejudice of the people against vaccination and to the inexperience of our physicians in the matter of smallpox. But for the enlightened action of his Excellency the Governor in authorizing the expenditure of so much of the emergency fund appropriated for the suppression of epidemics of pestilential disease, in section 29 of the Act in Relation to the Board of Health, as might be necessary

<sup>\*</sup>The details as to counties can be found in the tables given in the two annual reports of the Secretary to the Conjoint Session with the State Medical Society.

for the employment of small-pox experts, the record would have been very much worse. By settling the diagnosis in doubtful cases and by giving specific instructions to county superintendents of health and to county and municipal authorities, very many outbreaks were stopped far short of what they otherwise would have been. The State never received a greater return from the expenditure of the same amount of money. The difficulties of the situation were increased by the fact that eleven counties had no superintendent of health. Some official vested with authority is manifestly necessary in the proper management of epidemics of contagious disease, and the only official so endowed by the law is the county superintendent of health. Inasmuch as the county commissioners included in the above number had not responded to repeated appeals from the Secretary, the Board felt that the public interests demanded the correction of this omission and the action set forth in the following correspondence was taken:

RALEIGH, June 8, 1899.

HON. Z. V. WALSER.

Attorney-General.

DEAR SIR:—At the recent annual meeting of the State Board of Health at Asheville I was instructed to obtain your opinion as to the proper course to be pursued to secure the performance by county commissioners of the duty laid upon them in section 5 of chapter 214, Laws of 1893, viz.: the election of a county superintendent of health.

In view of the prevalence of small-pox in the State at present and the still greater prevalence probable next winter, and of the fact that the county superintendent of health is the only official empowered by law to take charge of outbreaks of contagious disease, it is unnecessary to say that the interests of the people require such an official in every county. There are eleven counties without a superintendent.

An early reply would oblige,

Yours very truly,

RICHARD H. LEWIS, M. D.,

Secretary.

# STATE OF NORTH CAROLINA, EXECUTIVE DEPARTMENT.

# OFFICE OF ATTORNEY-GENERAL.

LEXINGTON, N. C., June 10, 1899.

Dr. RICHARD H. LEWIS,

Secretary State Board of Health, Raleigh, N. C.

Dear Sir:—In reply to your letter of recent date, I will say that section 711 of The Code makes it a misdemeanor for a county commissioner to neglect to perform any duty required of him by law and subjects him to a penalty of \$200 for each offense. I have no doubt that if you will call the attention of the county commissioners to the duty imposed upon them by section 5, chapter 214, Acts 1893, of electing a county superintendent of health, that they will comply promptly therewith.

Very respectfully,

Zeb. V. Walser,
Attorney-General.

Again at the meeting of the Board at the time of the Health Conference at Wilson, November 1, 1899, another effort was made, the details of which can be gathered from this letter, which was sent to every county commissioner in the State:

RALEIGH, November 25, 1899.

DEAR SIR:—At a meeting of the State Board of Health at Wilson, on the 1st inst., the small-pox situation in relation to our State was canvassed. The unanimous conclusion reached was that the outlook for the coming winter is very threatening. This opinion was based upon the fact that during the past winter and spring the disease had been very prevalent in our own State, more than six hundred cases from May 1, 1898, to May 1, 1899, and still more extensively in the adjoining States of South Carolina and Virginia, particularly in Norfolk and vicinity, and especially upon the further fact that in Virginia and in one or two of our own northeastern counties, for a long while after the beginning of the epidemic, practically no effort was made to control its spread, and no disinfection of the houses and effects of small-pox cases was practised. The germs, therefore, are still present in numberless places—hundreds it would be safe to say-and small-pox being a cold weather disease, chiefly, we have good reason to expect a renewal of the epidemic this winter on a still larger scale, unless the proper precautions are promptly taken. As confirming the above, I will say that in several outbreaks in our State since the cool weather set in this fall the disease has been traced in nearly every instance to Norfolk or vicinity.

In view of the conditions stated the following action was taken by the Board: "On motion, the Secretary was instructed to write to all the county commissioners in the State individually, urging upon those in counties having no superintendent of health the pressing necessity for the election of such official, as required by the law of the State (section 5, chapter 214, Laws 1893), and upon all the great importance of making preparation for probable outbreaks of small-pox, and recommending for vaccination glycerinized points."

The first and most essential part of this preparation is a realizing sense of their responsibility in the premises on the part of county and municipal authorities. If this state of mind exists the actual preparations will surely and promptly be made.

There is only one certain way of preventing the introduction and spread of small-pox, and that is by the thorough vaccination of all the people, for quarantines are notoriously ineffective, while they are expensive and Vaccination should be encouraged whether small-pox is immediately at hand or not, but upon the occurrence of a case in a county, general vaccination, certainly in that neighborhood at least, should be ordered and rigidly enforced. The best method of securing this—assuming a sufficient amount of "back-bone" on the part of the commissioners, which is a sine qua non—is for the county to furnish the virus and arrange with the physicians who can be counted on to do the work for little or nothing, and make it free to all. Ample powers to provide for and enforce vaccination are conferred upon boards of commissioners by section 23 of the act cited above. For your convenience, I enclose copies of those sections bearing upon small-pox and bespeak from you a careful reading of the same. I will also send you a copy of our Bulle-TIN for the present month, which is now in press, and I commend to you the valuable article on "Vaccination as an Economic Measure" by Dr. Dodson. It will well repay reading.

When small-pox has actually made its appearance in a county, much the best, and in the end the cheapest, way to manage and control it is to have all cases immediately transferred to a small-pox hospital or pest-house, and to have all persons who have been exposed vaccinated at once and quarantined or detained in suitable quarters until sufficient time has elapsed to prove that they have not contracted the disease. In our climate the hospital and the detention quarters may be cheap cabins or floored tents, with stoves. Preparation on this line would consist in making inquiries now as to the availability and price of lumber and tents, so as to be able to decide on a moment's notice which you would prefer in case of emergency, and where they could be obtained. As you have no doubt observed through life, it is the man who is ready that "gets there" in every line of work.

Under the law (see section 9) the superintendent of health must see that all cases of the contagious diseases mentioned are properly quarantined and that thorough disinfection is practiced, but it is not made his duty to treat these cases—small-pox—any more than diphtheria or scarlet fever. As a matter of fact, however, the superintendent does treat them, and inasmuch as attendance thereon is sure to wreck his private practice and largely deprive him for the time being of his usual means of livelihood, I hope you will pardon me if I suggest that when he is required to do this work he should receive such extra compensation as would be fair and right.

Hoping that you will give the subject matter of this letter your serious consideration, I am,

Very respectfully yours,

RICHARD H. LEWIS, Secretary.

With the exception of Camden and Tyrrell every county responded and there is now a legal health officer for every county except those two and the new county of Scotland, which has been organized since.

EXTRACTS FROM THE ACT IN RELATION TO THE BOARD OF HEALTH, CHAPTER 214, LAWS 1793, BEARING ON SMALL-POX.

As amended by the Legislature of 1897, the following is the correct reading of

Section 5. There shall be an auxiliary board of health in each county in the State. The boards shall be composed of all registered physicians resident in the county. From this number one physician shall be chosen by the board of commissioners of each county annually on the first Monday in May of each year to serve with the title of superintendent of health, and the said board of commissioners shall fix the compensation of said county superintendent of health. His duty shall be to gather vital statistics upon a plan designated by the State Board of Health. He shall always promptly advise the Secretary of the State Board of the unusual prevalence of disease in his county, especially of typhoid fever, scarlet fever, diphtheria, yellow fever, small-pox, or cholera. His reports shall be made regularly, as advised by the State Board, through their Secretary; and he shall receive and carry out as far as possible such work as may be directed by the State Board of Health. He shall make the medico-legal post-mortem examinations for coroner's inquests, and attend the prisoners in jail, home for the aged and infirm, and house of correction, and make an examination of lunatics for commitment. He shall be the sanitary inspector of the jail and home of his county, making monthly reports to the board of county commissioners: Provided further,

that it shall be unlawful for said county commissioners to elect any one not eligible to membership in the county board to the office of county superintendent of health, if any such qualified physician can be found in the county willing to accept the office.

Sec. 9. Inland quarantine shall be under the control of the county superintendent of health, who shall see that diseases especially dangerous to the public health, viz.: small-pox, diphtheria, scarlet fever, yellow fever, typhus fever and cholera, are properly quarantined and isolated within twenty-four hours after the case is brought to his knowledge; and that after the death or recovery or removal of a person sick of either of the diseases mentioned, the rooms occupied and the articles used by the patient are thoroughly disinfected in the manner set forth in the printed instructions, both as to quarantine and disinfection, which shall be furnished him by the Secretary of the State Board of Health. The expense of the quarantine and of the disinfection shall be borne by the householder in whose family the case occurs, if able, otherwise by the city, town or county of which he is a resident. The failure on the part of a county superintendent of health to perform the duties imposed in this section shall be punished by the deduction of five dollars for each day of delinquency from his salary by the board of county commissioners; and if it shall appear to the satisfaction of the county board of health that the death of any person from the spread of the disease can justly be attributed to such failure of duty on his part, he shall be deposed from office and a successor immediately elected to fill out his unexpired term. Any person neglecting or refusing to comply with or in any way violating the rules promulgated in the manner above set forth on the subjects of quarantine and disinfection, shall be deemed guilty of a misdemeanor, and upon conviction shall be fined or imprisoned, at the discretion of the court, not less than five nor more than fifty dollars or less than ten nor more than thirty days. In case the offender be stricken with the disease for which he is quarantinable, he shall be subject to the penalty on recovery, unless in the opinion of the superintendent it should be omitted: Provided, however, that in any city or incorporated town having a regularly appointed medical health officer who is a member of the county board of health, the duties assigned in this section to the county superintendent of health shall be performed by the said medical health officer for the people of his city or town, and he shall be subject to the same penalties for dereliction of duty at the hands of the board of aldermen or town commissioners as are directed to be imposed by the county commissioners and county board of health upon the superintendent: Provided, further, that the quarantine of ports shall not be interferred with, but the officers of the local and State boards shall render all aid in their power to quarantine officers in the discharge of their duties upon the request of the latter: Provided, that the custody

and care of any child or other person may remain in custody of parent or family.

SEC. 10. When a householder knows that a person within his family is sick with either of the diseases enumerated in section nine, he shall immediately give notice thereof to the health officer or mayor, if he resides in a city or incorporated town, otherwise to the county superintendent of health, and upon the death or recovery or removal of such person the rooms occupied and the articles used by him shall be disinfected by such householder in the manner indicated in section nine. Any person neglecting or refusing to comply with any of the above provisions shall be deemed guilty of a misdemeanor, and upon conviction shall be fined not less than one dollar nor more than fifty dollars.

SEC. 11. When a physician knows that a person whom he is called to visit is infected with small-pox, diphtheria, scarlet fever, typhus fever, yellow fever or cholera he shall immediately give notice thereof to the health officer or mayor, if the sick person be in a city or incorporated town, otherwise to the county superintendent of health, and if he refuses or neglects to give such notice of it in twenty-four hours he shall be guilty of a misdemeanor and shall be fined for each offense not less than ten nor more than twenty-five dollars. And it shall be the duty of the said county superintendent, health officer or mayor receiving such notice of the presence of a case of small-pox, yellow fever, typhus fever or cholera within his jurisdiction to communicate the same immediately by mail or telegraph to the Secretary of the State Board of Health. A failure toperform this duty for twenty-four hours after the receipt of the notice shall be deemed a misdemeanor, and shall subject the deliquent upon conviction to a fine of not less than ten nor more than twenty-five dollars.

SEC. 13. The school committees of public schools, superintendents of graded schools and the principals of private schools shall not allow any pupil to attend the school under their control while any member of the household to which said pupil belongs is sick of either small-pox, diphtheria, measles, scarlet fever, vellow fever, typhus fever or cholera, or during a period of two weeks after the death, recovery or removal of such sick person; and any pupil coming from such household shall be required to present to the teacher of the school the pupil desires to attend a certificate from the attending physician, city health officer or county superintendent of health of the facts necessary to entitle him to admission in accordance with the above regulations. A wilful failure on the part of any school committee to perform the duty required in this section shall be deemed a misdemeanor, and upon conviction shall subject each and every member of the same to a fine of not less than one nor more than twenty-five dollars: Provided, that the instructions in accordance with the provisions of this section given to the teachers of the schools within twenty-four hours after the receipt of each and every notice shall be deemed performance of duty on the part of the school committee. Any teacher of a public school and any principal of a private school failing to carry out the requirements of this section shall be deemed guilty of a misdemeanor, and upon conviction shall be fined not less than one nor more than twenty-five dollars.

SEC. 23. Vaccination.—On the appearance of a case of small-pox in any neighborhood all due diligence shall be used by the superintendent of health that warning shall be given, and all persons not able to pay shall be vaccinated free of charge by him, and the county superintendent shall vaccinate every person admitted into a public institution (jail, county home, public school) as soon as practicable, unless he is satisfied upon examination that the person is already successfully vaccinated; the money for vaccine to be furnished by the county commissioners. The authorities of any city or town, or the board of county commissioners of any county, may make such regulations and provisions for the vaccination of its inhabitants under the direction of the local or county board of health or a committee chosen for the purpose, and impose such penalties as they may deem necessary to protect the public health.

Sec. 24. The board of county commissioners of each county is hereby authorized at any time to call a meeting of the county board of magistrates or justices of the peace to take into consideration the health interest of the people of their county, and, with the approval of the said board of magistrates, to levy a special tax to be expended under the direction of a committee composed of the chairman of the board of county commissioners, the mayor of the county town and the county superintendent of health for the preservation of the public health.

A perusal of the following extracts from the Bulletin, which is, in effect, a monthly letter to all physicians, chairmen of boards of county commissioners, mayors, etc., in the State (in addition to numerous letters of hand and telegrams to individuals), will show the further work done in attempting to control the disease. Special attention is called to the decision of the Supreme Court affirming the legality of compulsory vaccination—a most important and valuable decision—printed in the Bulletin for March, 1900.

[From the Bulletin of January, 1899.]

## SMALL-POX AGAIN.

We are just in receipt of a letter from a county superintendent of health, announcing a fresh outbreak of small-pox "in another part of the county, but communicated from the old cases." He goes on to say: "There are now ten or more new cases of small-pox. I am doing the

best I can, under the existing law, to prevent it spreading by having the parties quarantined, but it is next to impossible to stop all communication. Those who violate the law are usually those who are in communication with the disease, and are unable to pay a fine, so would have to be committed to jail for punishment. By so, doing the inmates of the jail would be infected. So what best to do is giving our board of commissioners no little trouble. The present board of commissioners will do all they can."

Knowing the superintendent above referred to to be a man of great courage and energy, and believing what is said of the board of county commissioners from an acquaintance of many years with its chairman, it seems to us that the problem ought to be solved without any very great difficulty. Ample powers are conferred by the law, and the superintendent and board of commissioners working in harmony, the latter supplying the necessary money and moral support, for when one man has to do unpopular things it is a great help to have somebody to back him up, could effectively enforce the regulations. In section 9 of the law we find that "any person neglecting or refusing to comply with or in any way violating the rules promulgated in the manner above set forth on the subjects of quarantine and disinfection shall be guilty of a misdemeanor, and upon conviction shall be fined or imprisoned, at the discretion of the court, not less than five nor more than fifty dollars, or less than ten nor more than thirty days." In section 10 the householder and in section 11 the attending physician are both subject to fine up to fifty dollars for not giving immediate notice of the presence of a case of small-pox. In sections 14 and 15 provision is made for the management of infected persons coming from another place and for travelers from an infected place in another State. In section 23, under the head of "Vaccination," we find this: "The authorities of any city or town, or the board of county commissioners of any county, may make such regulations and provisions for the vaccination of its inhabitants under the direction of the local or county board of health, or a committee chosen for the purpose, and impose such penalties as they may deem necessary to protect the public health." Section 25 empowers all cities and towns to make any sanitary regulations they please.

From the above epitome of the more essential portions of the law bearing on small-pox, it seems to us that there is law enough and that the proper execution of it is all that is needed to control any outbreak, if action be prompt and thorough.

That this is not as easy in practice as it sounds we freely admit. The failure to report the presence of the disease at once, from ignorance or other reasons, is one of the serious difficulties in the very beginning; the difficulty of enforcing effectively a quarantine in the country referred to by our correspondent and the prejudice against vaccination we do not forget. But at the same time the disease can be managed under the con-

ditions that obtain with us in North Carolina, and in proof that it can be, we ask the reader who has followed us thus far to refer to Superintendent Long's article in the last issue of the Bulletin, and to read the following gratifying letter from the superintendent of Northampton county, the same being a reply to a circular-letter sent on the 10th inst. to all superintendents, asking for suggestions as to amendment of our health laws and also an amplification of a telegram sent before, announcing the appearance of a case of small-pox, as showing admirably in a few words "how to do it":

Jackson, N. C., January 11, 1899.

DR. RICHARD H. LEWIS,

Secretary State Board of Health, Raleigh, N. C.

My Dear Sir:—Your letter of January 10th to hand. I note with regret that an effort may be made to amend the health law of our State (chapter 214, Laws, 1893). Any interference with this law as it now stands upon our statute books would be, in my opinion, a grave mistake. This law, as it now stands, is well-nigh perfect in its practical workings. I speak from experience. For instance, on January 7, 1899, I was notified of a case of small-pox in this county (Northampton). By four o'clock in the afternoon of the same day this case was quarantined, also eight persons supposed to be infected. On January 9th I called the board of county commissioners together, and a compulsory vaccination, under penalty, was ordered within a radius of six miles, the infected houses being taken as a centre.

I had already telegraphed for virus, and by Tuesday night, January 10th, over 125 compulsory vaccinations had been made. This law has the approval of every intelligent man and tax-payer in this county. It gives us an efficient weapon with which to fight and stamp out contagious diseases, such as small-pox, scarlet fever, diphtheria and others, something that we were woefully lacking in before the passage of this act.

This law is a model provision for the purpose intended, and while the superintendents of health for most counties get very small pay, their salaries being regulated by the board of county commissioners, yet this law gives the greatest protection to person and property of the people of this State.

It can be said of this law that it can be put in operation almost instantly. I desire to urge upon you the great importance to the people of North Carolina generally, the towns and cities especially, of keeping this law intact as it now stands.

Very respectfully,

Henry W. Lewis,
Superintendent of Health Northampton County.

It seems to us Dr. Lewis has told the whole story. We wish to call attention particularly to: (1) His promptness. Before the sun set on the day he was notified of the case of small-pox (eight miles in the country, we learn from another communication) the case and eight other persons, who had been exposed, were quarantined. (2) To the fact that he took upon himself the responsibility of ordering by wire the vaccine virus to avoid delay that would have been occasioned by waiting for a meeting of the board of commissioners to authorize its purchase. (3)

To the early meeting of the board, their ready apprehension of the situation and the thorough-going methods of management, particularly in the matter of the compulsory vaccination of every one within a radius of six miles of the infection immediately ordered by them and executed by the superintendent.

Even at the risk of repeating it ad nauseam, we will say once more that the proper management of an outbreak of small-pox is summed up in (1) vaccination at the earliest possible moment of all persons who have been exposed to the disease and everybody else in the immediate neighborhood; (2) the removal of the patient to a special hospital for such cases and the thorough disinfection of the house and its entire contents as soon as he leaves it; (3) the strict isolation of all persons suspected of infection in a house of detention until the incubation period has been fully passed, and (4) the most watchful and unceasing care in the matter of disinfection in all directions in relation to the attending physician himself, the nurses, clothes, bedding, house and everything. Should it be found that there is any disposition to ignore or violate the regulations the immediate imposition of a severe penalty would stop it. Let us suppose the violator to be one too poor to pay a fine, and presenting such a case as is described by our first correspondent. Commit him to jail-in the house of detention for the first part of his sentence, but when his period of incubation has expired have him bathed and well disinfected and clothing him in a clean suit of clothes, put him in the common jail for the remainder of his sentence. There would be no more infractions of the rules. As mentioned at the time in our columns, the prompt commitment to jail of a man who refused to be vaccinated, by the mayor of Charlotte, brought him to terms in less than twenty-four hours, and materially aided in the accomplishment of the vaccination of the people.

We trust our readers will pardon our ringing the changes on the fundamental principles of the management of small-pox, but that disease is the danger of the hour in this latitude, and it is one with which, we are happy to say, our people are not familiar.

At present small-pox exists in McDowell, Northampton, Edgecombe and Tyrrell counties—not widespread as yet in either locality.

A WORD WITH THE BOARDS OF COUNTY COMMISSIONERS OF THE STATE.

Small-pox is at this present writing a menace to the people of our whole State. It already exists in four counties in the State, as mentioned above. It is liable to spread from those counties, or centres of infection, not only to people in the immediate neighborhood, but in these days of easy and rapid transit, to more remote communities. We are also threatened from our sister States to both the north and south of us. As is now generally known, it exists in Norfolk and its neighborhood, especially Berkley, from what we can learn. The city of Norfolk itself seems to be manag-

ing its ontbreak well, but we do not feel so well satisfied about the outlying districts. Owing to the intimate relations, both business and social, existing between Norfolk and the eastern section of the State particularly, a sharp eye should be kept on persons coming thence, or from the towns adjacent to it. As the disease is limited almost entirely to negroes, we think it would be well, for the present at least, to limit anything like a a strict surveillance to that class. There are also forty-five cases in Sumter county, S. C., and travelers from that locality should be regarded with a watchful eye.

The mere statement of the facts just enumerated demonstrates the reality of the danger that threatens us. The question now before us is how to avert the danger. The prime responsibility rests upon the superintendents of health, whose duty it is to see that each case of the more dangerous contagious diseases is promptly quarantined and that thorough disinfection is employed, but inasmuch as he is not possessed of the means to successfully grapple with an outbreak of any size unless supplied by the county commissioners, the latter, it seems to us, are almost equally responsible. It is a very grave responsibility, and should be most seriously considered. As there is no way of telling when a case may appear, and as the necessary preparations for properly caring for it cannot be made instantly, it is clearly advisable, to express it very mildly, that these preparations should be made in advance, partially at any rate, so that they can be completed without loss of time. In the very first place, the most important step, the vaccination of the people, should be taken without delay. The superintendent should be authorized to purchase a sufficient supply of good vaccine virus that he may vaccinate the children of the public schools, the inmates of the county home and of the jail, and all persons unable to pay. If the danger be universal other physicians should be employed to assist him. The board of commissioners is fully empowered in section 23 of the law to make such regulations and impose such penalties as may be necessary to enforce vaccination, and it ought not to hesitate about doing it. Thorough vaccination of all the people solves completely the small-pox problem. In the second place arrangements should be made for taking immediate possession of two houses suitably located, when the occasion arises, for isolating and caring for patients and those who have been exposed to the disease until a sufficient time has elapsed to prove that they are not in-When the time comes these establishments must be manned with the necessary guards, nurses, cooks, etc., that the requirements of simple humanity may be met. These arrangements of course would cost something, but as the cities and towns would be peculiarly endangered, from a business as well as a medical point of view, it would be to the mutual interest of both town and county to join forces in this matter, thereby dividing the expense. But after all what would the expenditure amount to in comparison to the suffering and death and loss in business that a neglected epidemic of small-pox would surely entail?

We wish to call the attention of the commissioners of those counties having no superintendent of health to the fact that they have no legal machinery for the management and control of contagious diseases. The law invests these powers in an official whose title is county superintendent of health and explicitly, in section 5, commands the commissioners of every county to elect such an officer. Why some boards, in view of their oath of office, have failed to perform this plain duty we have never been able to understand, but some boards have failed to do so. We have received an explanation from one very small county in the statement that no doctor could be found who was willing to take the place; but what inducement was offered the doctor was not mentioned. The present boards being all new boards, and but recently installed in office, we hope they will repair this serious omission of their predecessors. You may not realize ordinarily the value of a superintendent of health, but if small-pox should invade your county, as may happen any day, you will feel the need of some one legally empowered and required to take charge of the management of it. Gentlemen, "now is the accepted time." Act at your next meeting in February.

In conclusion, we hope you will pardon us for saying a word in regard to the compensation of superintendents of health. As a rule, from what we can learn, they are underpaid, and in one or more counties the office is farmed out to the lowest bidder—a sure guarantee of an inferior man, who would, in all probabity, not earn the pittance he accepts. But it is not so much in regard to the pay under the usual circumstances we wish to speak as it is to the remuneration during the presence of small-pox. Believing the men now filling the office of county commissioner to be men of intelligence and character and just-minded, we take it that there is probably no reason for the suggestion, but you will pardon us for suggesting that when the superintendent has to deal with an outbreak of small-pox he deserves reasonable extra compensation. His patients are apt to become afraid of him while engaged in this work and he is forced to make a much greater personal sacrifice than ought in justice to be demanded of him.

[From the Bulletin for February-March, 1899.]

#### SOME ADDITIONAL REMARKS ON SMALL-POX.

We almost feel as if we ought to apologize to our readers for dwelling so much upon the subject of small-pox, but it is becoming day by day a more and more serious question with us. It is constantly springing up in new places and now presents seven *foci* of infection in the State, to say nothing of Virginia and South Carolina. The management of small-pox

outbreaks is theoretically simple and easy, and so it would be practically but for obstructions and difficulties for which we fear our own profession is largely to blame. For example: 1. The reluctance in some cases on the part of the attending physician to make the positive diagnosis of small-pox. He hems and haws, perhaps, and finally winds up by calling for an expert, thereby losing valuable time, to say the least. We hope we will not be misunderstood. There are undoubtedly cases now and then which are not easy of diagnosis, especially to one who has, perhaps, never seen a case, but under the conditions now prevailing, with small-pox everywhere, and in view of the universally recognized opinion that during the prevalence of that disease the proper thing to do, whenever there is any doubt about the diagnosis, is to give small-pox the benefit of the doubt, it does seem to us that except in very rare instances there ought to be no hesitation about it. But there too often is. Only the other day one of our best men, and a warm friend of ours, "hollered" for an "expert." We requested a distinguished member of the board of large experience to go to his aid. He did so promptly. Our friend wrote thanking us for sending him, etc., which we appreciated, but not being in a very amiable frame of mind about his "playing the baby act," as we call it, it was with deep, inward, though possibly wicked, satisfaction we read this: "Dr. - came, saw the case and announced that 'so plain a case of small-pox was it that the wayfaring man, though a --fool, could tell it afar off." While the expert's style of expression might be regarded possibly by some as a trifle strong, it was picturesque and unquestionably effective in its influence on public opinion.

2. The disposition exhibited by some physicians, although they have nothing to do with the case, and often refuse an invitation to see it for fear of the effect on their practice, to belittle it and cast doubt on the diagnosis, thereby unsettling the public mind and directly encouraging the people in their opposition to vaccination or other necessary precautions that may be irksome or inconvenient. In a letter from a leading citizen of one of our towns in which this state of affairs existed, in spite of the unanimous opinion of all of the four physicians who saw the cases in consultation, he said that at least eighty per cent. of the people rebelled against the preventive regulations ordered, while he was satisfied they would not only submit but assist in carrying them out if the diagnosis should be confirmed by an expert from a distance. Now, it is perfectly apparent that the hostile attitude of the public was incited and fostered by the physicians who made light of the diagnosis of small-pox, calling it chicken-pox, when they had never seen it. Unfortunately one of the cases of "chicken-pox" died, and the expert who was sent said there was no doubt about the nature of the disease-that it was smallpox. Such conduct strikes us as being extremely reprehensible and inexcusable. It is directly against the interests of the community, and must react injuriously on those so conducting themselves. If when a

case is diagnosed as small-pox all the physicians in the town who have not seen it assume with the public that it is correct, there would be very little trouble in enforcing the necessary regulations.

3. Prejudice against vaccination. This seems to be more marked among the operators of cotton-mills than any other class. This is a very serious matter, for owing to their being crowded together they present a most favorable field for the spread of small-pox. We are mindful, of course, of the natural reluctance of one who earns his daily bread with his hands to jeopardize for a time even the use of his hands, but the danger of disability is exaggerated beyond measure. As a matter of fact we fear that the objection to vaccinnation, not only on the part of mill operatives, but unfortunately of a great many other people, is simply blind prejudice. As this attitude of mind is nearly always associated with ignorance the subjects are practically not amenable to reason. So that for the protection of the community some degree of compulsion is necessary. As suggested in a former issue of the Bulletin, it has occurred to us that an announcement on the part of the employer that in cases of disability from vaccination pay sufficient to prevent suffering would be continued during such disability would remove the basis of a reasonable objection on the part of the employee. As the tendency among operators, upon the appearance among them of small-pox, is to scatter and seek employment at other mills, it strikes us that an arrangement or agreement among all mill-owners not to employ hands from other mills unless they brought a certificate from their last employer stating time of departure and asserting absence of small-pox at said time, would be a great protection.

#### SMALL-POX INSPECTOR FOR THE STATE.

Doctors Thomas and O'Hagan, a committee of the Board, made, the first week in March, an examination into the small-pox conditions in the eastern part of the State. They found them to be so threatening that the President called a special meeting of the Board at Raleigh, Sunday, March 5th, to consider them. The action taken is stated in the following extract from the minutes: "In view of the gravity of the situation, increased by the inefficiency found in some places and the widespread opposition to vaccination found generally, it was unanimously decided, after discussion, to ask the Governor to authorize the expenditure of a sufficient amount of the contingent fund conditionally appropriated in section 29 of the Act in Relation to the Board of Health for visitations of pestilential disease, to employ a special inspector to visit all infected points, thoroughly inform himself of the situation, and advise the local authorities as to the best management of the outbreak in every respect, including particularly the value and importance of vaccination, said inspector to receive instructions from and report to the Secretary of the Board."

Having adopted this resolution, the Board repaired to the Executive Mansion, where it met with a pleasant reception from his Excellency, who showed an intelligent appreciation of the situation, and promptly authorized the proposed expenditure for the purpose mentioned. In completion of this action on the part of the Board, Dr. Henry F. Long, of Statesville, was appointed small-pox inspector. Our readers will remember the excellent paper by Dr. Long on the management of a considerable outbreak in his own county of Iredell, which appeared in the January number. We deem ourselves fortunate in having secured his services, for in addition to being a man of sense and force he has had exactly the experience that will fit our conditions. We bespeak for him from the communities he may visit a respectful hearing of his advice and suggestions—they will be worth listening to.

Upon inquiry of the committee, we learned that wherever they found the physicians of a community united and harmonious there was no trouble in getting the people vaccinated and the regulations carried out—that whenever there was any it could nearly always be traced to some "kicking" doctor. This coincides with our own observation, as has already been expressed, but we do hope that our brethren who are constitutionally disposed to take "the other side" will for the public good carefully avoid saying or doing anything that might be seized on by the people as an excuse. Let's all pull together!

[From the Bulletin for April, 1899.]

# THE SMALL-POX SITUATION.

The small-pox situation in the State is at this present writing (April 21) much the same as a month ago, though somewhat improved. nineteen counties then reported as having the disease, seven, Tyrrell (?) (there is no superintendent of health in Tyrrell, we regret to say, and our information is hearsay), Columbus, Wilson, Edgecombe, Halifax, Northampton and Johnston have gotten rid of it, for the time being, at any rate; while in three others (Alamance, Moore and Warren) no new cases have been reported and the patients are about ready to be discharged. New cases since the March reports, however, have appeared in Anson (report from Anson unsatisfactory, but there are apparently several); Union, 2; Mecklenburg, 1; Chatham, one negro family, number attacked not given; Beaufort, 2; Iredell, 1, varioloid, and additional cases in Gates and Wake. So that there are now sixteen counties having small-pox instead of nineteen last month. In most instances the number of cases is small, the disease is mild in character, and the outbreaks are well managed. On the whole, the condition of affairs is much more satisfactory, for which credit is largely due to the earnest and well-directed efforts of our faithful and efficient Small-pox Inspector, Dr. Henry F.

Long, of Statesville. We have received from the communities he has visited nothing but words of commendation of his work and thanks to the Board for sending him.

As we have said before, we find that where all the physicians pull together, and the authorities promptly institute thorough measures and the health officer attends to his duties, there has been no trouble in controlling the disease. In this connection, as a suggestion to our medical brethren in other counties, we take much pleasure in printing the following strong and pointed resolutions adopted by the physicians of Edgecombe when small-pox first appeared in that county:

"Whereas, A committee of the auxiliary board of health of Edgecombe county, after due investigation, has reported that the disease now prevailing in epidemic form in Hickory Fork township, Edgecombe county, is small-pox; and,

"Whereas, Vague rumors have reached the ears of the board that some physicians are inclined to discredit such report, to discourage the efforts being made to prevent the spread of the contagion, and otherwise embarrass the members of the board in the discharge of their duties; therefore.

"Resolved 1. That it is the opinion of the auxiliary board of health of Edgecombe county that the epidemic now prevailing in No. 3, or Hickory Fork township, is small-pox.

"2. That any physician who shall be called to suspicious or well-marked cases, and shall fail to report same immediately, shall be dealt with according to law."

This has the right ring. We would remind our readers that the last clause in the resolutions means "shall be fined for each offense not less than ten nor more than twenty-five dollars." Similar action promptly taken would have saved much trouble in one or more counties we could name.

#### A WORD TO THE BOARDS OF COUNTY COMMISSIONERS.

At your next regular meeting, the first Monday in May, it will become your duty to elect a county superintendent of health, to hold office for one year. We would respectfully call your attention to the prime importance of selecting competent men for that very responsible position—men of intelligence, common sense, energy and conscientiousness. Those of you who have had small-pox in your counties doubtless realize this as you never did before, and those whose counties have so far escaped would do well to bear it in mind, for the disease is likely to visit you any day. We also beg to call the attention of the boards of the few counties having no superintendent to their helplessness without such an officer of the law in such a contingency, and to express the hope that they will remedy that condition. The term of office of all superintendents expires

and a new term begins, under the law as amended in 1897, the first Monday in May.

We feel sure that in making their selection the commissioners will not be unmindful of the sacrifices made by those superintendents who have to manage outbreaks of small-pox in the loss to their private practice entailed thereby. Unless this pecuniary loss has been offset by liberal extra pay, it seems to us that simple equity demands the re-election of such superintendents, provided they have shown themselves faithful and competent.

[From the Bulletin for January, 1900.]

### THE SMALL-POX SITUATION.

It is with much regret that in the conditions as regards small-pox now prevailing in the State, we find the fulfilment of our prediction that the disease would in all probability be worse this winter than it was last. The reports from county superintendents of health for December, 1899, show small-pox- present in fifteen counties, the total number of cases being 162, plus "a few" in Davidson county (see review of diseases for December, 1899). Since the first of January new foci of infection have developed in eleven additional counties, namely, Alamance, Bertie, Davie, Forsyth, Gates, Moore, Orange, Richmond, Robeson, Stanly and Watauga-one case only in all but Gates and Richmond-and some outbreaks have materially increased in extent. As definite reports are only made to us monthly, we are unable to give the exact number of cases at this writing, but it is certainly much greater than it was two weeks ago. In a word, small-pox is spreading rapidly in North Carolina just now. The causes are failure in previous cases to enforce proper disinfection of premises and personal effects of the patients, neglect of vaccination, and the "kicking doctor."

As nearly every outbreak can be traced to a visitor from another State, our own health officers, it appears, are not often to blame, but those of our neighbors. At the same time we cannot say that we are entirely without sin in this respect and we trust that all our county superintendents of health and municipal health officers will be very careful in this matter of disinfection. "A lick and a promise" will not answer, but the work must be thoroughly done to be effective, or seed-beds for another crop next winter will be left. For all outbreaks of this origin, the health officer is responsible, for the law definitely and positively makes it his duty to see that both quarantine and disinfection are properly carried out. He should never forget the fearful consequences that may follow a neglect in any particular of this most important duty.

The neglect of vaccination is attributable to several causes. In the first place, to an unreasonable prejudice against it on the part of many

people, chiefly of the more ignorant classes. Owing to the remarkable mildness of the disease as it has so far appeared, the death rate being less than two per cent., the corrective effect of fear cannot be brought to bear with much force upon this prejudice. So that this attitude on the part of the people can be understood, and in the case of the laboring man who, with his family, is dependent upon manual toil, perhaps, excused. But there is another influence which re-enforces this prejudice and mightily supports the obstructionists, and that is what we call, rather inelegantly, perhaps, the "kicking doctor." We had occasion to refer to him last season, but we had hoped that with increase of knowledge he would disappear, but it seems that he is still with us. Generally the physician who has talked the loudest and longest in dispute of the diagnosis of small-pox has uniformly and persistently refused all invitations to see the case, and for him, of course, there can be no excuse whatever. But when the disease first appeared there was undoubtedly often reasonable ground for doubt on the part of even intelligent and learned physicians.

The disease as it has appeared in this country during the past two years, in addition to its extraordinary mildness in most cases, has assumed irregular and unusual forms, different in some respects from the descriptions to be found in the text-books-the only sources of information, fortunately, for many years available to an immense majority of our medical practitioners. Hence, the chief reason for the mistakes in diagnosis. In nearly every instance, however, the exceptions having been very rare, experts have declared the disease to be genuine small-pox. Now, these facts have been before the medical public for at least a year, and one would think that they would be given due weight in coming to a conclusion, but to our mind the strangest feature of the position of those denying the diagnosis of small-pox has been almost their invariable contention that the disease was chicken-pox, even when occurring in adults. We are sure we are not expressing it too strongly when we say that every physician that can fairly claim to be well informed knows that chicken-pox is so rare in adults that it is practically unworthy of consideration in making a diagnosis of an eruptive disease in a person past the period of childhood. We will wager that not one per cent. of the physicians of North Carolina saw a single case of chicken-pox in a grown person in the ten years preceding 1898, notwithstanding its frequent prevalence among the children of their clientele. Then, why so many cases of chicken-pox now, when it is known of all men that genuine small-pox, although frequently atypical in form, is widely prevalent.

As we do not claim to be an authority on this subject, we beg leave to support our position by the following quotations from those acknowledged by all to be among the highest authorities, which we find reprinted in a recent supplement of the Ohio Sanitary Bulletin from the nineteenth annual report of the South Carolina Board of Health:

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Osler, Principles and Practice, Second Edition, page 69: "Varicella is an acute contagious disease of children, it is a disease of childhood. A majority of the cases occur between the second and the sixth year. It is rarely seen in adults."

Keating Ency. Diseases of Children, article Varicella, by Dr. Charles G. Jennings: "An acute specific infectious disease peculiar to childhood. In children over ten years of age the disease is rare, while in adult life it is so infrequent that many observers of large experience have not met with it. Varicella is particularly a disease of infancy and early childhood. Any varicella-like eruption in an adult should be looked upon with the greatest suspicion and the patients strictly isolated until by the history of the case, its source and the course of the disease, all doubts as to the diagnosis is dispelled."

Dr. James Nevens Hyde, in Pepper's System of Medicine, says: "Varicella is essentially a disease of early life, occurring almost exclusively in infants and young children."

Alex. Collie (Quain's Dictionary of Medicine) says: "It is certain it arises from contagion, and childhood is a predisposing cause. It occurs in children at the breast, and is seen with increasing frequency up to the fourth year, at which period it attains its maximum. It is less often found between four and twelve, and after twelve it may be said to disappear, although it is occasionally seen in adults."

Bartholow's Practice of Medicine, Fifth Edition, page 717: "It is a disease of childhood, and rarely attacks any above ten years of age."

Dr. Louis Thomas (Leipzig Ziemssen's Cyclopædia) says: "Varicella is a disease of childhood and attacks by preference young children and even sucklings. In children over ten years of age attacks are infrequent, and I never saw an adult suffering from varicella. Eruptions resembling varicella in adults always indicate variola."

To these we would add:

Dr. James T. Whitaker (American Text-book of Theory and Practice of Medicine, page 290) says: "It (varicella) is confined exclusively to child-hood (exceptions having been noted by Heberden, Gregory and Seitz) up to the age of ten, and is rare after twelve."

We hope that hereafter any physician who feels it incumbent upon him to uphold the proverb, "doctors differ," when the case under consideration is an adult, and especially if the history of recent successful vaccination is not clear, will fall back on something else than chicken-pox—say "impetigo contagiosa"—it sounds bigger—or "Cuban itch," or "elephant itch," or "Georgia bumps," or "any other old thing." But jesting aside, this is a very serious matter, as we know from experience. This refusal to accept the diagnosis of small-pox, which, with very rare exceptions, has always proved to be correct, by a few physicians—not many we are glad to say—has done much harm in our State. It has furnished a rallying cry for those opposed to vaccination, it has under-

mined public opinion, and it has supplied an excuse for inaction to weak-kneed officials. As every one knows, promptness and thoroughness of action upon the appearance of a case of small-pox in a community, in isolating the case and all who have been exposed, and in vaccinating all the people, are absolutely necessary to its complete control. The "kickers" impede and delay this action, and in so far interfere with the welfare of the people.

We admit, of course, the right of every man to his own opinion, but we deny the right to an unnecessary public expression of that opinion when it is calculated to endanger the lives and prosperity of his neighbors.

In the face of the conditions that now confront us, it seems to us, with all due deference, that the proper attitude of the patriotic physician toward small-pox is this: If he has not seen the case, he cannot, of course, give an opinion as to the diagnosis, but if asked directly he should say-as the present state of affairs would fully justify-that he does not know, not having seen it, but that in view of wide dissemination of the disease throughout the State and country, it is most likely small-pox, and advise the questioner to be vaccinated with all under his control at once. If he has seen the case first and has the slightest doubt about its nature he should call a consultation immediately. If there is still reasonable doubt about it after careful consideration, an expert should be asked for. In the meantime he should give the people the benefit of the doubt, which is the accepted rule under such circumstances, and although personally he might honestly believe it to be some other disease, he should bury his opinion for the time, and to all questions say: "It is doubtful. Be vaccinated." This course should also be pursued by consultants.

Knowing the physicians of the State to be as a class a high order of men, we hope and believe that the course of action suggested above would be followed of their own motion, but small-pox is a comparatively new disease with us, its occurrence in a community causes much excitement and anxiety among the people, their doctor is the one to whom they first turn, and in view of the gravity of the situation and of their power to control it, we trust the word of warning we have felt it our duty to utter will not be taken amiss, for a grave responsibility rests upon every one of us in this matter.

Under the present circumstances every case of eruptive disease resembling small-pox, about which there is the slightest doubt, should be managed as if it were small-pox until it is disproved.

## THE DIAGNOSIS OF SMALL-POX.

In view of the atypical character of many cases in the prevailing outbreak of small-pox and the consequent difficulty in making a positive diagnosis; of the great importance of coming to a definite conclusion

promptly; and of the fact that any physician is now liable to be called on at any time to make the diagnosis, we feel that our kind medical readers will appreciate the following liberal extract from a recent circular, which explains itself:

THE DIAGNOSIS OF SMALL-POX.

Circular issued by Provincial Board of Health of Ontario to Physicians, Medical Health Officers and Members of Local Boards of Health of Onturio.

Dear Sirs:—In consequence of the occurrence during the past year of an eruptive contagious disease in many parts of the continent of America presenting some of the characteristics of small-pox, yet so mild in the large proportion of cases as to have caused a very low mortality, there has, as a consequence of this, resulted in many instances a failure to diagnose its true character. The disease has, therefore, in many States become epidemic, causing, if not much loss of life, at least great loss of time and money in suppressing it. Inasmuch as at any moment, especially in the coming cold weather, it may take on all the virulent characteristics of small-pox, the Provincial Board of Health desires to make all who may professionally or officially come in contact with the disease acquainted with its more marked characteristics.

The following are the signs and symptoms of small-pox generally noticed:

- 1. A prodromal period of more than twenty-four hours with headache, pain in back and vomiting.
- 2. The rapid abatement of prodromal fever and malaise on appearance of the secondary eruption.
- 3. A primary erythematous eruption or rash, especially covering the abdomen.
- 4. The appearance on the third day from onset of the papular eruption with its firm shot-like feeling, and the tendency of the eruption to appear especially on exposed surfaces, as face and wrists, notably on forehead and about nose and lips.
- 5. The appearance early of a red around the vesicles, which follow in successive crops for two or three days, becoming mature and pustular by the fourth or fifth day with their typical umbilication.
- 6. The appearance of the eruptive vesicles on the roof of the mouth and fauces—this being of special diagnostic value.

The rodent character of the pustules and the sub-cutaneous inter-cellular infiltration serve to complete a picture—which, if taken with the fact that it is a disease attacking adults equally with children, along with a history of probable infection—will cause in most instances the diagnosis to become easy.

All, however, who have come in contact with the present outbreak are agreed that these normal characteristics may be much modified.

Thus, Dr. John Coventry, medical health officer for Windsor, in substance states in a recent paper before the Windsor Medical Society, that:

- 1. Some have but little prodromal fever; some have pains in back, some do not; some vomit, some do not.
- 2. In some the eruption without shotty feeling appeared altogether and disappeared with one crop; in others there is the shotty feeling with the succession of crops.
- 3. All the secondary eruptions are papular in the first stage (there being seldom any primary rash) and become vesicles within two days; some have aborted at this stage and dried up, while others become semi-purulent, marked at the apex with a dark spot, but with no umbilication.
  - 4. In no case has there been secondary fever.
- 5. Adults have had a more severe eruption than children, the vesicle in the latter blackening and drying up at the vesicular stage, the crust falling off at the seventh or tenth day from beginning of eruption.
  - 6. Some have the eruption on the fauces and some have not.
- 7. None of the cases seen by him had been vaccinated; while raccinated persons living in contact with it do not contract the disease, and children vaccinated in time in houses where it is have escaped it.
- 8. The outbreak has been traced to a man from a district where it prevailed epidemically.

William M. Welch, M. D., of Philadelphia, in a circular issued by the Pennsylvania State Board of Health, is quoted, in substance, as follows:

"After a careful examination, I have no hestitation in saying that the disease about Pittsburg is small-pox. It is extremely mild in character, so mild that many of the more usual symptoms are either absent or so indistinctly marked as to be overlooked. No weight should be given to "the absence of the so-called characteristic small-pox odor, or of the secondary suppurative fever."

The circular issued by the State Board of Health of Indiana, states:

- 1. There can be no destruction of the true skin, but it will always be possible to find a few typical indurated pustules not simulated by any other condition.
- 2. It is characteristic that these pustules will not on pricking completely discharge their contents, but will be found to retain a firm base, raised somewhat above the level of the surrounding skin.

[From the Bulletin for February, 1900.]

# A WORD AS TO QUARANTINE AND DISINFECTION.

As our readers are well aware, we are not a believer in the efficiency of the ordinary internal quarantine, by which we mean the attempt to prevent the introduction into an inland town of a contagious disease—say

small-pox just now-from a neighboring town that is infected with it.

Having previously given our reasons for holding to this opinion, we will not weary our readers with repetition of them further than to simply state once more what we regard as the chief objection to it. It is this: It lulls the people into a false sense of security and, in so far, interferes with the application of the only sure preventive of small-pox, namely, vaccination. The aspect of quarantine that we now wish to consider is the quarantine of small-pox patients and those who have been exposed to the disease. In the management of an outbreak of small-pox this is, of course, all-important. It would be superfluous to dwell on this point, but for the fact that from certain things that have come to our knowledge we fear that in some instances the quarantine is executed in so careless and slipshod a manner as to practically nullify it. For example: A negro living in the country was found to have small-pox. He was left in his own house (one-room hut, probably), together with the other members of his family. Notices were stuck up around the house stating the presence of the disease and warning all persons not to leave or enter under a penalty of \$25 fine. And this was all that was done. It is possible, of course, that the warnings were duly observed voluntarily by the inmates of the house, but it is extremely unlikely. It is somewhat more probable that the neighbors, for their own protection, took it upon themselves to see that they were heeded, but this is far from certain. In any event, this kind of quarantine cannot be depended on, and therefore should not be practised. As we understand it, no quarantine can be really effective without guards. Guards cost money, and there, we fear, is the trouble. The health officer may be thoroughly informed and earnestly disposed to do his duty in the matter, but unless he is supplied with the "sinews of war" by the authorities, county or town, he is helpless. A conscientious regard for the judicious expenditure of the people's money by those having it in charge is greatly to be commended, but judicious expenditure does not mean unwise withholding. We cannot imagine any better way to spend the public moneys than in protecting the people who furnish it from so loathsome a disease as small-pox. Generally, when the cases become numerous and the people get scared, the purse-string is loosed and the necessary appropriation made, but by that time it has become a large and expensive problem. It seems to be a difficult matter to get those in authority to realize that it is not only best in every way, but cheapest, to act promptly and thoroughly and nip the epidemic in the bud. In nothing does the old proverb, "a stitch in time saves nine," apply more forcibly than in this matter.

From several sources complaints have been made to us of carelessness on the part of physicians attending small-pox, that they do not change their clothes after visiting the patient nor take any reliable precautions against carrying about with them and distributing the contagion. We fear there is some ground for these complaints, and, if true, we must say

that we cannot think of any valid defense against them. A suit of overalls, a yard or two of cheese-cloth for covering hair and beard, and a bichloride tablet are both easily obtainable and very cheap. The extra time and trouble required is too small a matter to be considered. Such carelessness on the part of the attending physician would not only vitiate the quarantine in itself but set a most unfortunate example. Precept is of no avail as against example.

Disinfection, we fear, is not always thoroughly carried out. Patients, we doubt not, are sometimes discharged too soon, before desquamation is complete. It should not be forgotten that desquamation is not always complete when the scabs have fallen off, but is going on as long, it is said, as the little red specks remain in the pits. And the period of desquamation is the most dangerous stage of the disease to others. But the greatest danger lies in the failure to properly disinfect the houses and effects of the patients. This is due, perhaps, in some cases to lack of the proper facilities, although sulphur and an iron pot are surely within reach of every one. The best method, however, from every point of view is, in our opinion, by formaldehyde gas. Good generators of the gas can be obtained for from ten to thirty dollars, and they will last indefinitely, and every county and town in the State should possess one. There will be constant need of them for disinfection after diphtheria and scarlet fever even after small-pox has disappeared. But as suggested in our last issue, small-pox will not finally disappear if proper disinfection is neglected, unless all the people are vaccinated, which seems to be a vain hope. It will continue to recur indefinitely. So the best investment of money and the best work, next to vaccination, is in the line of disinfection.

[From the Bulletin for March, 1900.]

# THE LEGALITY OF COMPULSORY VACCINATION.

Our Supreme Court has just rendered a decision affirming the right of county and municipal authorities to enforce compulsory vaccination—greatly to our satisfaction, for an adverse decision would have been fraught with the gravest consequences to our people. It gives us, therefore, much pleasure to print below the able opinion of the Court as delivered by Justice Clark. Bearing as it does upon an always important and now especially interesting subject, we hope the newspapers of the State will give it wider publicity by printing it in their columns:

No. 169.

N. C. Supreme Court—February Term, 1900.

Alamance County.

STATE, Appellant, v. W. E. HAY.

Attorney-General for the State. Defendant not represented.

Clark, J. Chapter 214 of the Laws of 1893 is a well considered and carefully drawn statute for the preservation of the public health. Section 23 thereof, which is specifically in regard to vaccination, contains among other provisions this clause: "The authorities of any city or town or the board of county commissioners of any county may make such regulations and provisions for the vaccination of its inhabitants under the direction of the local or county board of health or a committee chosen for the purpose, and impose such penalties as they deem necessary to protect the public health." There is no provision of the Constitution which forbids the Legislature so to enact, and it is indeed an exercise of that governmental police power to legislate for the public welfare, which is inherent in the General Assembly, except when restrained by some express constitutional provision.

Salus populi suprema lex, "the public welfare is the highest law," is the foundation principle of all civil government. It is the urgent cause why any government is established, for, as Burke says, "any government is a necessary evil." It is, however, a much lesser evil than the intolerable state of things which would exist if there were no govern-· ment to bridle the absolute right of every man to do "that which seems right in his own eyes," like the Israelites in days of Micah. The above maxim, quoted from Lord Bacon, is placed appropriately first by Broom in his treatise on "Legal Maxims" with this just observation: "There is an implied assent on the part of every member of society that his own individual welfare shall, in cases of necessity, yield to that of the community, and that his property, liberty and life shall under certain circumstances be placed in jeopardy or even sacrificed for the public good." This observation, which is almost a literal translation from Grotius, he fortifies by quotations from Montesquien, Lord Hale and many opinions from both sides of the Atlantic. But it needs none, for it is every-day common sense that if a people can draft or conscript its citizens to defend its borders from invasion it can protect itself from the deadly pestilence that walketh by noonday by such measures as medical science has found most efficacions for that purpose. We know as an historical fact that prior to the discovery one hundred and one years ago of vaccination by Edward Jenner, small-pox often destroyed a third or more of the population of a country which it attacked, and so futile was every precaution and the most careful seclusion, that the greatest sovereigns fell victims to this loathsome disease, which Macaulay has styled "the most terrible

of all ministers of death." If this was so in days of imperfect communication, the present rapid means of intercourse between most distant points would so spread the disease as to quickly paralyze commerce and all public business, if government could not at once stamp out the disease by compelling all alike, for the public good as much as for their own, to submit to vaccination. Statistics taken by governmental authority show that while 400 out of every 1,000 unvaccinated persons exposed to the contagion are attacked by it, less than two in a thousand take the disease when protected by vaccination within a reasonable period. There are those, notwithstånding these well ascertained facts, who deny the efficacy of vaccination, as there are always some who will deny any other result of human experience, however well established, but the Legislature. acting in their best judgment for the public welfare, upon the information before them, has deemed vaccination necessary for public protection, and their decision, being within the scope of their functions, must stand until repealed by the same power.

The power of the Legislature to authorize county and municipal authorities to require compulsory vaccination has been exercised by nearly every State, and has been recently sustained by the highest courts of two of our sister States. Morris v. Columbus, 102 Ga., 792; Blue v. Beach (Supreme Court Indiana, February 1, 1900), 56 N. E. Rep., 89, and there are no decisions to the contrary. In reply to the argument that such exercise of power by the Legislature may in some cases infringe upon individual rights, Cobb, J., in the Georgia case just cited, well says: "No law which infringes upon the natural rights of man can be long enforced. Under our system of government, the remedy of the people, in that class of cases where the courts are not authorized to interfere, is at the ballotbox. Any law which violates reason and is contrary to the popular conception of right and justice, will not remain in operation for any length of time, but courts have no authority to declare it void merely because it does not measure up to their ideas of abstract justice. The motive which doubtless actuated the Legislature in the passage of the act now under consideration was that vaccination was for the public good. In this the General Assembly is sustained by the opinion of a great majority of the men of medical science, both in this country and in Europe."

But even if we were of opinion with the small number of medical men who contend that vaccination is dangerons to health and not a preventive of the disease, the court is not a paternal despotism, gifted with infallible wisdom, whose function is to correct the errors and mistakes of the Legislature. Brodnax v. Groom, 64 N. C., 250. Our people are self-governing, and themselves correct the mistakes of their representatives. The function of the courts is to construe and apply the laws, and they can hold a statute nugatory only when plainly and clearly violative of some provision of the organic law which has restrained the legisla-

tive power. Sutton v. Phillips, 116 N. C., 502; White v. Murray, at this term.

Nor does section 23 of the act require that the Board of Aldermen shall pass such ordinance in conjunction with the Board of Health (as the defendant contends). It merely provides that the execution of the ordinance, i. e., the vaccination, shall be under the direction of the local board of health or a committee appointed by the aldermen.

While the Legislature has power to authorize municipal bodies to provide compulsory vaccination, and the defendant did not comply with the ordinance enacted by the town of Burlington, in pursuance of such authority, though afforded opportunity to do so, it is true that there may be some conditions of a person's health when it would be unsafe to submit to vaccination, and which therefore would be a sufficient excuse for non-compliance, but it does not vitiate the ordinance that such exception is not provided for and specified therein. It is not a defense that a person bona fide believes that it will be dangerous for him to be vaccinated or believes that he is already sufficiently protected by former vaccination, nor would the opinion of his personal physician on either point be conclusive (though it would naturally have weight with the jury), for there may be evidence or circumstances tending to the contrary. Indeed, as to a former vaccination being sufficient protection, the opinion of the official physician supervising the vaccination should be presumptively correct. That which would relieve from a complication with the ordinance is a matter of defense, the burden of which is upon the defendant, and is a fact to be found by the jury. The special verdict is ambiguous and defective in this particular and is set aside. Let there be a new trial.

#### SMALL-POX AND MUNICIPAL AUTHORITIES.

All cities and towns are, naturally and properly, very loth to advertise anything that is likely to interfere with their trade. In consequence there is a tendency, whenever there happens to be a difference of opinion among the doctors as to whether an eruptive disease is small-pox or chicken-pox, to agree with the latter and to announce to the world in the local papers that there is no small-pox in X, but that it is nothing but chicken-pox, and no one need hesitate to visit the town. Having recently called attention to the fact that whenever an impartial expert has seen the cases he has almost invariably pronounced them small-pox, we do not propose to dwell further upon this aspect of the subject. We propose to look at it for the present solely from the point of view of the trade of the town.

At first, in the beginning of the epidemic, the claim of chicken-pox may have been accepted by some, but now the people have "caught on." The claim has too often proved to be unfounded, and the outside public greet such assertions with a smile of incredulity. No matter how sincere the physicians and town authorities may be in their belief that the disease is chicken-pox-and we surely do not intend to intimate that they are ever otherwise than sincere—other people do not believe it. The result of this is liable to be distrust of all subsequent statements on the subject and a hesitancy in accepting the final announcement that there is no longer any small-pox in the town—the admission of the true nature of the disease having, after much resistance, been made. So that the restraint upon trade is continued much longer than legitimately it should be. According to our belief, the towns that suffer least from outbreaks of small-pox are those which promptly recognize and announce the disease, and which provide all the necessary facilities for taking care of it and preventing its spread. It is easy to understand how one would much prefer to visit such a community, knowing the authorities to be alert and on the watch for all cases, immediately segregating them in a pest hospital and all persons exposed to them in a house or camp of detention, than to take his chances of rubbing up against a case of the same disease, even if it is called "chicken-pox," in the railway station, the postoffice, or on the street, in another town where it has been allowed free rein under the name of chicken-pox, causing widespread infection. And besides, when a town of the former class announces the final disappearance of the disease it is immediately accepted and the check upon trade is at once removed.

We now turn to another aspect of the subject, and that is to the consideration of our duty in the premises.

The powers of the State Board of Health are purely advisory, and we cannot therefore compel a community to take care of its own people, that duty being delegated by the law to the local authorities, but we have the power, and it is our plain duty, to do all we can to protect the people of the State generally against a community that permits itself to become a menace to the public health. When, therefore, a town refuses or neglects to strictly quarantine under guard its own cases and suspects as well, and permits them to escape to form new joci of the disease in other communities, we shall feel compelled to notify the people directly and through the public prints of the fact and advise that said town be quarantined against. It is unnecessary to say that such advice would not promote the trade of that town. It is no excuse to say that there is doubt about the diagnosis, for the sanitary rule that the same precaution should be taken against doubtful cases as against unquestioned smallpox is inexorable. When, however, the disease is admitted to be smallpox, and suspects, through inexcusable carelessness or deliberately to save the town trouble and expense, are allowed to escape, utterly regardless of the welfare of other people, our duty becomes urgent.

We would dislike very much to take such action, but a conscientious regard for our duty would admit of no alternative. We hope that we may not be called upon to act.

### [From the Bulletin for April, 1900]

#### ELECTION OF COUNTY SUPERINTENDENTS OF HEALTH.

We beg leave to call the attention of all boards of county commissioners to the fact that they are required by the law as amended by the General Assembly of 1897 to elect a county superintendent of health at their meeting in May. The amended law reads: "From this number (all registered physicians resident in the county) one physician shall be chosen by the board of commissioners of each county annually on the first Monday in May of each year to serve with the title of superintendent of health." We trust that this important matter will not be overlooked.

#### POLITICS AND SMALL-POX.

The inauguration of the political campaign brings to our mind the dangers in the matter of small-pox incident thereto, and we feel that a word of warning would not be out of place. Unusual interest in the issues involved seems to be felt, and the indications are that the meetings will be very numerous and very largely attended, and of course by all sorts and conditions of men, as they should be in a democracy.

In the past six months small-pox has prevailed in nearly half the counties of the State. The monthly reports for March show 437 cases for the month in 28 counties, and "a number of cases" in another county (for details see Review of Diseases on a subsequent page). Generally, the disease is very mild in character. Not infrequently it is so mild that the patient does not feel sick enough to go to bed, but being a little "under the weather" with what he calls, with the endorsement of some complaisant or ignorant physician, "chicken-pox," he is exactly in the right condition for visiting around among the neighbors, or loafing at the railway station, or above all, attending a gathering of any kind—political preferred. In many cases the eruption is so insignificant as not to attract attention, but nevertheless it is the genuine article, and capable of causing in the unvaccinated the most virulent and fatal form of the disease.

Again, small-pox may be spread by infected clothes. Too often it happens that the disinfection after recovery is not as thorough as it ought to be, and the poison that has attached itself to the clothing (fomites) remains active. It is hardly worth while to say that no unvaccinated man wedged in behind such a coat and breathing the exhalations from it would catch small-pox almost to a certainty.

The idea of the possibility of a deliberate and malicious spreading of the disease by some bitter partisan entered our mind but was immediately dismissed as absurd. We read, however, in this very morning's paper a statement of a case exactly in point, where a man had "three buggy whips worn out on him" because he refused to be vaccinated, and threatened if possible to catch small-pox and spread it among his political enemies. But be that as it may, there is no question of the danger attached to large gatherings of any kind in communities where small-pox—and especially small-pox of exceptionally mild type that is too often called chicken-pox—is prevalent or has recently prevailed. Indeed, there is danger now in all large gatherings anywhere in this section, for small-pox "bobs up serenely" in a most unexpected manner in all sorts of places. We are fairly well supplied with points of infection ourselves, but our sister States continue to re-inforce us in a most unpleasant and undesirable way, and one never knows when he may come in contact with it.

The conclusion of the whole matter is this: Be Vaccinated. That is the simplest, most certain and practically only solution of the difficulty.

## REPORT OF TREASURER FOR THE TWO YEARS ENDING DECEMBER 31, 1900.

1899.		EXPENDITURES.	
Feb. March		Salary of Secretary-Treasurer for January\$ Western Union Telegraph Co., telegrams in relation	83. 33
		to small-pox in February	8. 84
	5.	Salary of Secretary-Treasurer for February Dr. George G. Thomas, per diem and expenses, small-	83. 33
		pox investigation and called meeting of Board—Dr. Charles J. O'Hagan, per diem and expenses, small-pox investigation and called meeting of	40. 00
		Board	55. 78
	•	March 5	4. 00
	23.	Stamps for mailing Biennial Reports	25. 00
	07	Stamps for general purposes	5.00
		Stamps for mailing Biennial Reports Dr. H. F. Long, fee and expenses as small-pox	10. 00
		expert	60.40
April	1.	Salary of Secretary-Treasurer for March	8 <b>3</b> . 33
		Office rent, first quarter	15.00
		Postage on monthly Bulletin for two months	2. 02
		Postal Telegraph Co., small-pox telegrams in March, Western Union Telegraph Co., small-pox telegrams	2.84
	υ.	in March	14. 14
	12.	Postage on Bulletin	1.02
	15.	E. M. Uzzell, State Printer, 500 postal cards for printed notices to Superintendents of Health	5. 00
	20	Stamps, general purposes	10.00
May		Salary of Secretary-Treasurer for April	83. 34
		The Sanitarian, subscription to eight copies for members of the Board	28. 00
		Dr. Albert Anderson, two bacteriological analyses	
		of Tarboro water supply	20.00
	15.	Western Union Telegraph Co., small-pox telegrams in April	6. 78
	26.	Dr. Richard H. Lewis, expenses to National Conference of State and Provincial Boards of Health	
		at Richmond, Va., May 23, 24	18. 10
	26.	Dr. Albert Anderson, two bacteriological analyses	10, 10
		of drinking water for Oxford Orphan Asylum	20.00

June		Salary of Secretary-Treasurer for May\$	83. 33
	5.	Postage on Bulletin	1. 24
		Western Union Telegraph Co., telegrams in May	3.30
	8.	Dr. George G. Thomas, per diem and expenses,	
		annual meeting at Asheville	19.25
	10.	Dr. C. J. O'Hagan, per diem and expenses, annual	
		meeting at Asheville	36.00
		Dr. Albert Anderson, one-half per diem and expen-	
		ses, annual meeting at Asheville	13.00
		Dr. Albert Anderson, two bacteriological analyses	
		of drinking water	20.00
		Stamps	10.00
	13.	A. W. Shaffer, S. E., per diem and expenses, annual	
		meeting at Asheville	37.45
	22.	Dr. Richard H. Lewis, expenses at annual meeting-	22.65
	28.	Dr. Henry W. Lewis, one-half per diem and expenses	
		at annual meeting and one day investigating	
		small-pox at Morganton	29.00
		Dr. H. H. Dodson, one-half per diem and expenses,	
		annual meeting	16. 15
July	4.	Western Union Telegraph Co., telegrams in June,	5.96
•		Salary of Secretary-Treasurer for June	83. 33
		Office rent, second quarter	15.00
	10.	Postage on Bulletin two months	1. 61
		Southern Express Co., charges on sample bucket	
		of disinfectant	. 90
August	2.	Salary of Secretary-Treasurer for July	83. 33
		Western Union Telegraph Co., telegrams for July-	4. 90
		Dr. Albert Anderson, per diem and expenses, inspec-	2.00
	•	tion of Eastern Hospital for the Insane	6. 10
		Postage on Bulletin	. 90
	22	Dr. J. L. Nicholson, per diem and expenses, inspec-	
		tion Eastern Hospital for the Insane	24. 00
	29	L. Branson, one copy N. C. Farmers Directory	2.00
		Stamps	10.00
Sept.		Salary of Secretary-Treasurer for August	83. 34
cept.		Western Union Telegraph Co., telegrams in Au-	00.01
	0.	gust	1. 80
	91	Postage on Bulletin two months	1. 61
Oct.		Salary of Secretary-Treasurer for September	83. 33
OCt.	۷.	Richard H. Lewis, expenses inspection of State in-	00.00
		stitutions at Morganton	10. 65
	90		15. 00
Non		Office rent, third quarter	
Nov.	3.	Salary of Secretary-Treasurer for October	83. 33

Nov.	4.	Dr. George G. Thomas, per diem and expenses, in-	
		spection of State institutions at Morganton\$	21.00
	7.	Western Union Telegraph Co., telegrams in October,	. 70
	14.	Postage on Bulletin two months	1. 90
	18.	Dr. H. H. Dodson, per diem and expenses, Health	
		Conference at Wilson	28, 60
Dec.	6.	Dr. Richard H. Lewis, expenses Health Confer-	
		ence	6. 90
		Dr. Richard H. Lewis, expenses trip to Goldsboro	
		to address The Woman's Club on sanitation	3. 20
		Western Union Telegraph Co., telegrams in Novem-	
		ber	2. 62
		Salary of Secretary-Treasurer for November	83. 33
		Stamps	20.00
	14.	Dr. H. H. Dodson, per diem and expenses, inspec-	
		tion State Normal and Industrial College at	10.00
		Greensboro	19.86
	20.	Misses Ellington and Montgomery, typewriting in	
		duplicate for newspapers of report of Secretary	
		on epidemic of typhoid fever at Normal and In-	10.00
•		dustrial College	12. 30
	30.	Dr. J. L. Nicholson, per diem and expenses, Health	04.00
1000		Conference at Wilson	24. 60
1900			
Jan.	2.	Western Union Telegraph Co., telegrams in Decem-	
		ber, 1899	1. 50
		Postage on Bulletin	1. 03
	6.	Salary of Secretary-Treasurer for December	83. 35
		Office rent, fourth quarter of 1899	15. 00
	6.	Dr. Richard H. Lewis, expenses three trips to Nor-	00.05
		mal and Industrial College	20. 95
		Dr. Richard H. Lewis, expenses inspection convict	11 05
		camp at Castle Hayne	11. 85
		Dr. Henry W. Lewis, per diem and expenses Health	10.00
	0	Conference at Wilson	19.00
	9.	Subscriptions to eight copies of The Sanitarian for members of the Board	28. 10
	0.1	Dr. George G. Thomas, per diem and expenses in-	20. 10
	24.	spection of convict camp at Castle Hayne	6. 00
		A. W. Shaffer, S. E., per diem and expenses inspec-	0. 00
		tions of Normal and Industrial College, both A.	
		and M. Colleges and Central Hospital for the	
		Insane	69. 30
Feb.	9	Western Union Telegraph Co., telegrams in Jan-	00.00
Teo.	۵.	uary	6 62

4	-	
	- 6	

### EIGHTH BIENNIAL REPORT.

Feb.	2.	Dodson Printers' Supply Co., one Horton mailer \$	20.00
	3.	Salary of Secretary-Treasurer for January	83. 33
		Postage on Bulletin	1.17
	22.	Thomas Whitaker, publisher, one copy Micro-	
		scopy of Drinking Water	3.50
		Dr. George G. Thomas, per diem and expenses, in-	
		spection of State University	10.75
		Dr. Richard H. Lewis, expenses two trips to the	
		University, inspection and small-pox	7.05
March	1.	Salary of Secretary-Treasurer for February	83. 33
	5.	Western Union Telegraph Co., telegrams in Feb-	
		ruary	2.31
	16.	Stamps	15.00
	20.	Dr. Richard H. Lewis, expenses Pure Food and	
		Drug Congress at Washington	32.05
April	3.	Western Union Telegraph Co., telegrams in March,	4.17
		Office rent, first quarter of 1900	15.00
		Salary of Secretary-Treasurer for March	83. 34
	18.	Postage on Bulletin three months	2.63
May	1.	Salary of Secretary-Treasurer for April	83.33
		Southern Express Co., charges on Pennsylvania	
		Reports, two volumes, to members of Board	2.80
		Dr. Albert Anderson, one bacteriological analysis	
		for Oxford Orphan Asylum	10.00
		Western Union Telegraph Co., telegrams in April-	1.79
	9.	Dr. J. A. Egan, Treasurer, annual dues of Board	
		to National Conference of State and Provincial	
		Boards of Health	10.00
	15.	A. Williams & Co., account from January 31, 1899,	
		to May 1, 1900, sundry small items as per vouch-	
		ers	5. 15
June		Postal Telegraph-Cable Co., telegrams	. 80
	8.	Salary of Secretary-Treasurer for May	83. 33
		Dr. Richard H. Lewis, expenses annual meeting	
		State and Provincial Boards of Health at Atlan-	
		tie City	42.25
		Western Union Telegraph Co., telegrams in May	2. 19
	13.	Dr. H. H. Dodson, per diem and expenses, annual	
		meeting of Board at Tarboro, May 22-23	26.85
		Dr. Albert Anderson, expenses National Confer-	
		ence State and Provincial Boards of Health at	
		Atlantic City	42.65
		Dr. Richard H. Lewis, expenses annual meeting at	
		Tarboro	10. 50
	15.	Stamps12	10.00

June	16. Dr. Henry W. Lewis, per diem and expenses, annual meeting	8 16.00
	27. Dr. J. L. Nicholson, per diem and expenses, annual	
	meeting	22. 35
T 1	Postage on Bulletin two months	1. 72
July	6. Salary of Secretary-Treasurer for June	83. 33
	Office rent, second quarter	15. 00
_	10. E. M. Uzzell, State Printer, 500 postal cards for	
	notices to Superintendents of Health	5. 00
	16. Postage on Bulletin	1. 49
	19. A. W. Shaffer, S. E., per diem and expenses, annual meeting Normal and Industrial College and Cen-	
	tral Hospital	36. 48
Aug.	23. Salary of Secretary-Treasurer for July	83. 33
Sept.	1. Salary of Secretary-Treasurer for August	83. 34
	4. Western Union Telegraph Co., telegrams in August,	1.08
Oct.	1. Postage on Bulletin two months	1. 84
	T. F. Brockwell, repairing typewriter	1. 50
	2. Salary of Secretary-Treasurer for September	83. 33
	Office rent, third quarter	15. 00
	26. Postal Telegraph-Cable Co., one telegram	. 25
Nov.	2. Dr. Richard H. Lewis, expenses trip to Normal and Industrial College	6, 80
	Salary of Secretary-Treasurer for October	83. 33
	22. Stamps	15.00
Dec.	5. Salary of Secretary-Treasurer for November	83, 34
	10. A. W. Shaffer, S. E., per diem and expenses, bien-	
	nial inspection of public water supplies at Ashe-	
	ville, Charlotte, Concord, Durham, Fayetteville,	
	Gastonia, Goldsboro, Greensboro, Henderson,	
	Lumberton, Monroe, New Bern, Raleigh, Reids-	
	ville, Rocky Mount, Salem, Salisbury, Sanford,	
	Statesville, Tarboro, Wadesboro, Wilmington,	
	Wilson and Winston 24	208.52
	12. Postage on Bulletin three months	3. 18
	14. E. M. Uzzell, State Printer, 500 postal cards, notices	
	to County Superintendents of Health	5.00
	18. Dr. H. D. Holton, Treasurer American Public Health	
	Association, transactions for two years	10.00
	19. Dr. Albert Anderson, thirteen bacteriological analy-	
	ses of water supplies	130.00
	Dr. W. T. Pate, twelve bacteriological analyses of	
	water supplies	120.00
	27. The McMillan Co., subscription to Journal of Hy-	
	giene for 1901	3. 75

Dec.	31. Southern Express Co., charges on 100 copies Disin-	
	fection and Disinfectants\$	2, 25
	Office rent, fourth quarter	15, 00
	Salary of Secretary-Treasurer for December	83. 34
	A. W. Shaffer, S. E., per diem and expenses, inspection of School for Deaf and Dumb and the Blind	27.00
	at Raleigh and State farms in Halifax	37. 30
	Trade Periodical Co., 100 copies of Disinfection and Disinfectants for County Superintendents of	
	Health	66, 67
	Drayage on Bulletin to post-office, 24 months at 15 cents	9. 00
	Balance on hand December 31, 1900	3. 60 64. 59
		4, 004. 81
	RECEIPTS,	
	Balance on hand January 1, 1899	69. 40
	Appropriation by State for 1899	
	Appropriation by State for 1900	

### APPENDIX.

#### THE STATE'S HEALTH LAWS.

READ BY HENRY W. LEWIS, M. D., OF JACKSON, AT THE WILSON HEALTH CONFERENCE.

In an address before the State Medical Society of New York, delivered in February of this year, Dr. William Osler made use of the following language:

"This is a nation of contradictions and paradoxes. A clean people, by whom personal hygiene is carefully cultivated, displays in public sanitation a carelessness which is simply criminal."

Again he says: "This is God's own country, with man's own back yards and the devil's own cess-pools." Such words from so eminent authority as Dr Osler should bid us pause and ask how these fearful conditions may be altered, for here in Eastern North Carolina it is an open secret that preventable disease is always with us. Why is this so?

Is it because we have no health laws or health officers? Let us see.

In chapter 214, section 5, of the Laws of North Carolina for 1893, entitled "An act relating to the Board of Health," we find: "The board of county commissioners in every county in this State are required to elect on the first Monday in May of each year a physician to serve as health officer."

This law is mandatory, and should the commissioners fail to elect a health officer, as therein provided, they would be guilty of a misdemeanor and subject to fine.

The duties of this health officer are prescribed by the law and he is known as superintendent of public health; he is the supreme authority in his county in matters pertaining to public health, his jurisdiction extending to incorporated towns having no health officer. Inland quarantine is under his control, and the law gives him the power to condemn nuisances dangerous to public and private health and to cause the same to be removed under penalty. He has also to make monthly reports to the Secretary of the State Board of Health and to the county commissioners.

This law, as I have said, is mandatory as to the election of the superintendent of public health and his duties, but in sections 24 and 25 it throws wide the door for the advancement and protection of public and private health, giving full power in that regard to the authorities of county, city and town. Section 24 provides that the county commissioners and magistrates are authorized to meet at any time and levy a special tax to be expended for the preservation of the public health under the direction of the chairman of the county commissioners, the mayor of the county town and superintendent of public health.

I will quote section 25 in full:

"The authorities of any city or town are hereby authorized, not already authorized in its charter, to make such regulations, pay such fees and salaries and impose such penalties as in their judgment may be necessary for the protection and advancement of the public health."

This law contains many other most useful and necessary provisions which the time at my disposal does not allow me to mention.

The people should read and study it, as it was passed for their benefit. I doubt if any other State has a better health law; it is a wide and broad law and has served us well during the present year in stamping out a threatened epidemic of small-pox.

With it we can meet any emergency which may arise, institute sanitary reforms and enforce sanitary regulations; yet, what are we doing in our towns and homes to avoid preventable disease? Very little, if anything.

The people are waiting quietly and patiently for some widespread epidemic of a fatal nature to make its advent among them, for it seems that disease must be followed by death, aye, many deaths, in this, our country, to arouse us to the importance of proper sanitation.

It has been said that great epidemics are the only great reformers. We seem to be waiting for some such visitation, while unmolested lie man's own back yard and the devil's own cess-pools, in which lurk the germs of "the pestilence that walketh in the night time." The destruction which wasteth in the noonday, claiming every year their victims, cutting off some bright and promising youth in the spring-time of life, or, saddest of all, some lovely maiden with the first blush of womanhood upon her cheek.

Throughout all this land, in country and town, there is sickness (preventable sickness) during the summer and autumn months. And why? Simply because we will not be clean, because we pay no attention to ordinary sanitary laws.

Osler says: "The responsibility for the widespread prevalence of disease rests directly upon the wanton carelessness of the people." This is hard language, but it is true.

Let me ask again, what are we doing here in North Carolina with our excellent health law? Many do not know that there is such a law on our statute books. What are we doing with our local health officer, who, beyond his duties at jail and poor-house and the occasional examination of a lunatic, perhaps, does nothing for the advancement of public and private health? He rests in inoccuous desuetude. And why?

Our people don't want anything done. They make no demands upon the law or the health officer for the improvement of public or private health, and if by chance he should get after one of these venerable back yards they become angry; they make a personal matter of it. I have known physicians to lose patrons by doing duty as health officers. I have lost them myself.

Why this unwillingness to have the health officer inspect our premises? It is not because he is incompetent. It is not because he does not do good work.

Go into the county homes in this State, go into the jails and note the great changes and improvements over the old unsanitary conditions. Here he has full power to enforce sanitary measures and regulations. Here he is held responsible.

Look at his work during the late small-pox outbreak and you will find it good. Why? Because the people were awakened to a sense of danger, the health law was invoked and the health officer allowed to do his duty.

The State Board of Health hopes and believes that the unwillingness of the people of North Carolina to take advantage of their opportunities. for better sanitation is due to the fact that they need to be enlightened concerning them, hence this conference here to-night.

Allow me to say a few words about our local health officers. Having been superintendent of public health in my county since 1885 and health officer of my town for the past year, I think I am somewhat qualified to speak about them, their joys and their sorrows. He is not always elected on his merits, but sometimes because he has a pull with the powers that be, and again because no one else will have the office. This is not as it should be. None but competent and active men should fill this important position.

The general public hold the local health officer in small esteem, many regard him as a mild kind of nuisance and think the small salary he receives is so much money thrown away. Let some dangerous, infectious or contagious disease establish itself among us, then he becomes a man of importance—the suggestions he receives would fill a volume—every one seems anxious to impress upon him that the whole responsibility rests entirely upon his shoulders. Yet, few will lend a helping hand to stamp out a threatened epidemic, many preferring to run away, returning when the work has been accomplished and danger over, to kick at the bills the town or county has to pay for the preservation of its health, trade and reputation.

The public seem to estimate the cost of disease by the amount of the doctor's bill. I need not say that they do not represent one-tenth of the cost of sickness, besides these bills are sometimes like a bill presented by a friend of mine to an old gentleman in Northampton county. The bill read: "Mr. Smith to Dr. Jones. To six visits, \$12; to medicine

furnished, 50 cents." Mr. Smith pulled out fifty cents and said: "Here, Doctor, I want to pay you for your medicine, and I will return your visits."

I hope no one in Wilson returns his doctor's visits. To my mind that would be a kind of social function, more honored in the breech than the observance.

The efforts of the health officer in stamping out disease are sometimes actively resisted. A favorite excuse for this is to question his diagnosis. Assistance is often given by some broken-down or an irregular physician who, in most instances, has never seen the case in question, but gives it as his opinion that the disease is not what the health officer pronounces it to be.

I know of nothing more dangerous to the health of a community than this. Such men usually find ready listeners. The usefulness of the health officer is impaired; his efforts at sanitation and disinfection seriously endangered.

The State Board of Health had some of these wise doctors to contend against during the present year (it's a comfort to know that ninety-nine per cent. of them were wrong), making it necessary to employ an inspector to diagnose small-pox.

A very aggravated case of this kind came under my notice during the past summer. Small-pox made its appearance in a small Virginia town near our border line, the local health officer very promptly recognized it. A certain physician in the town said it was not small-pox and pronounced as absurd all measures taken for the protection of the community.

A member of the Virginia State Board of Health was called. He said it was small-pox. Still the doctor contended it was not. A United States Marine Hospital expert was summoned. He agreed that it was small-pox. Yet the contending doctor held out until, alas, commencing with negroes, it invaded the homes of the white people. The sheriff of the county had it in his family. In all they had about sixty cases and it extended to the adjacent county, a distance of about twenty miles.

So you see that not only the laity but sometimes doctors contribute to the unhappiness of the health officer. The public should demand that when an honest difference of opinion exists as to diagnosis, two or more physicians having seen the patient, that an expert be called at once, whose opinion shall be taken as final, in the meanwhile every precaution used to prevent the disease from spreading.

Where a doctor ventures an opinion without seeing the case in question he should be utterly ignored and disregarded.

However, I have neither time or inclination to enlarge upon the sins of the doctors. The object of this meeting is to try and sow the seeds of sanitary reform broadcast among you, and the appearance of this audience gives promise that they may fall upon fruitful soil.

To-day we stand upon the very threshold of the twentieth century. This great Southland has already awakened from its Rip Van Winkle slumbers, and we are manufacturing our own products successfully and in profitable competition with the North. The future opens bright before us. We have a great country; a great people are laboring earnestly for its educational, commercial and agricultural upbuilding. What are they doing for its healthfulness?

Are we taking the proper measures to avoid all preventable disease, or is this, as Osler says, "God's own country, with man's own back yard and the devil's own cess-pool?" My friends, I fear the above quotation about expresses the existing conditions in Eastern North Carolina.

Why not alter the conditions? Why not be clean? Have you a health law? A most ample one. Have you health officers? The law provides you with them. Then what is wanting? Only this, that our people should awaken to the importance of sanitation—use the health law and the health officer. Both were created for their benefit—both are waiting to be used.

This rapidly growing, beautiful town (with factories building and factories built and operating) has a great future. Will you make it healthy? Will you make it clean, not only as to its public places, but the back yards as well. We believe that you will. We hope that you have the good of this town at heart.

We have no knowledge of your sanitary surroundings, but will make bold to say they can be improved. In order to improve them the first thing you have to do is to take your hands off your pocket books.

A town which is humping itself like Wilson needs to pay some taxes and spend some money for its health.

Every householder should attend to the cleanliness of his premises; every house-wife attend to the sanitation of her dwelling. In short, you must be more or less your own physician, in a sanitary sense, and you will have to spend a little money to get your premises clean and keep them clean. Your health officer will tell you how to do it. Let me ask, do you pay him a reasonable salary, because his work will be most disagreeable and onerous, and it is not in mortal man to serve faithfully in the affairs of this world without compensation. You want good work, so make the office worth something and you will get it.

A health officer, when he goes to work cleaning out a town, has no easy time if he is an active practitioner of medicine. He perchance may lose a few patrons by doing his duty, for a very curious thing happens when you invade a man's back yard. They become blind to the conditions which exist there; even their olfactories refuse to recognize the unwholesome odors. They flatter themselves that they live in the utmost cleanliness, but they are quick to recognize and complain of their neighbors, especially if there is some preventable malady existing in the neighborhood. Such people are apt to indulge in kicking and abuse. The health officer will certainly run against more or less of this kind of thing,

but those among you who are determined to have a clean town and keep it clean will uphold him in doing his duty and see that he loses nothing by it.

I will draw on my experience and tell you of an instance which illustrates this kicking propensity when the health officer gets in his work. Several years ago a certain village in Northampton county was afflicted with epidemic dysentery. So violent was the type of disease that many died of it; indeed, some one telegraphed to Raleigh that they had cholera there. I was summoned by a petition signed by twelve citizens to come down, make an inspection of the town and recommend measures for its sanitation.

I went. I condemned everything I could find in the way of a nuisance, including the back yards of those who signed the petition. I became immensely unpopular. They spoke of hanging me in effigy, but the disease kept claiming its victims. Even the drummers stopped coming. So they took my advice, cleaned up and drained. To this day they have been free from dysentery.

Now, I have said you must be your own physician in sanitary matters so far as your households are concerned. We know by experience who is boss in this department.

Mr. President, if we could only get the ladies to take hold of sanitation in North Carolina something would be accomplished. We are all married men, sir, some distance from home, but it is an inspiring sight to see such a gathering of beauty and loveliness as greets us here to-night to lend its presence to the cause of sanitation.

Let me entreat you, fair dames, to carry this matter home to the men. Then must it follow, as the night the day, that there will be sanitation in Wilson.

The most practical way to commence work is to clean up, under the advice of the health officer or the family physician. Let every one sweep before his own door. It has been said no one can improve himself without improving others. Your neighbor may follow suit, and so it may go on down the line. If you find an obstinate man in the way complain of him. The authorities will know what to do. This health law I have been telling you about makes provision for him. If he is not able to stand the expense of cleaning the premises the nuisance can be removed at the expense of the town, provided the cost is not more than one hundred dollars.

Remember always that eternal vigilance as to the minutest detail of household and back yard cleanliness, keeping the soil clean, the water supply unpolluted, is the price of health.

Never use an open well. Always have them driven (the deeper the better), for if anything has been demonstrated in Eastern Carolina it is that the old-fashioned well, two or three feet in diameter, was a most fruitful source of danger.

If there is an undrained place on or near your premises which holds even a little water, drain it, for mosquitoes breed in such places, and we now know that they inoculate us with the parasites of malaria, and we should sleep under nets in summer to protect us from these pests.

With wire gauze keep all insects out of the house. The common house fly has been shown to carry the germ of typhoid fever and other diseases upon his legs and wings. Trim up the shade trees, cut down the weeds, remove all superfluous shrubbery, let in the sun-light and let the soil dry. Make permanent provision for removing at regular intervals everything which has even a suspicion of uncleanliness about it. Keep on hand some good reliable disinfectant to use upon the sites where such removal has taken place.

I will not prolong these suggestions. You have your physician and your health officer. They will gladly advise you what to do if you apply to them.

Now, when you have gone to work in a cheerful, hearty manner, and have cleaned up the premises, making permanent provision for keeping them clean without the health officer having to do disagreeable things to you, before the mayor or somebody else, how you will boast (I expect you brag some now) that Wilson is the cleanest, healthiest, most progressive town in the State.

Mr. President, those of us who are growing gray in the practice of our profession begin to think that we have not lived in vain.

We have seen the standard of medical education advanced in North Carolina, until now the license of the State board of examiners is a guarantee of competency.

We have seen theory and speculation as to the cause of disease replaced by accurate scientific demonstration. We have watched the evo ution of the germ theory until now nearly every disease can be diagnosed with the microscope.

We have seen the surgeon, whose methods are aseptic (absolutely cleanly) invade with impunity all the vital cavities of the body. We have seen the wonderful Xray reveal to the eye our bones and internal organs. We know that we have not been idle as to improved methods in the treatment of disease. Diphtheria has been robbed of its fearful mortality by the use of antitoxin; the death rate in typhoid fever greatly reduced by the employment of the cold bath. We now know that vaccination practiced at regular intervals for several generations would eradicate small-pox from the human family.

In a hundred different ways we have come to a better understanding of disease and its treatment. But all these great advances are as nothing before the triumphs of sanitary science in the prevention of disease.

Cholera and typhoid fever have been swept away. Yellow fever can be restricted and stamped out. (See the results at Hampton, Va., during the past summer).

We have learned to fight tuberculosis and diphtheria with some measure of success, and with what weapon? By what means can these results be accomplished?

The answer is brief. By cleanliness, pure water and a clean soil, cleanliness of person, of household and back yard.

The surgeon who to-day would disregard the lessons of asepsis (cleanliness) in his book could be prosecuted for malpractice, yet the citizen can sacrifice his own and his neighbor's loved one on the altar of ignorance and go unscathed.

The negligence of even one man is capable of creating an epidemic.

A notorious example of this occurred at Plymouth, Pa., in 1885, when one case of typhoid fever, on the water-shed of the stream from which the town obtained its drinking water, caused twelve hundred people to have the disease.

Mr. Pressdent, what does it profit us to have Leonard Wood clean out Santiago de Cuba? What good does it do to have George Waring lay down his noble and useful life, a martyr to enforcing sanitary regulations in Havana, when here in North Carolina, with the rays of the nineteenth century's boasted civilization shining full upon us, we neglect the very measures we presume to teach others, and that, too, with excellent health laws and competent health officers?

Let us hope that the time is near at hand when the people of this great and noble State will awaken to the importance of both public and private sanitation, will learn to use this law and the health officer; not because some great epidemic has shown them the necessity for such action, but because their own good sense tells them it is wise—it is in line of progress to do it.

Now, one word to the mayor and aldermen of this town and I am done. To them I would say that the State Board of Health is preaching to-night as best as it can from the old Latin text: Salus populi suprema est lex, and as such, it should be enforced without fear and without favor.

We entreat you to use the power the health law of your State gives you, and to use it wisely.

#### VACCINATION AS AN ECONOMIC MEASURE.

READ BY HENRY II. DODSON, M. D., MILTON, N. C., AT THE WILSON HEALTH CONFERENCE.

I desire to discuss with you a subject of which you have heard very much in the past few months—small-pox and the means of prevention. Small-pox has been in many parts of the country for more than a year and is now and will continue to be until a more effective remedy is used.

What does small-pox do in a community? Leaving out the question of its being a dread epidemic and a loathsome disease, that is, the illness per se, it interrupts business and trade, it closes your schools, public and private, and it has interfered with the courts, causing their postponement, thus entailing an additional expense on the county by detention of criminals in the jails, and it even closes your churches.

In some country districts, and, in several instances in my knowledge, farming operations were stopped. It interferes with everything.

You are a branded community—cut off and quarantined from the outside world.

Therefore, small-pox is an enemy to life, health, trade, agriculture, education, law, religion and society in general.

What is the effective remedy? Not general quarantine and hospitals and pest-houses, but *vaccination*. Of this you have heard a great deal, and I do not care to discuss with you vaccination as the greatest and most beneficent discovery of any age, preventing with absolute certainty, as it does, this dread disease, and saving thousands of lives, for this is a settled fact. But I wish to present vaccination in a new phase—as an economic measure; how a city, community, the tax-payers, can save money.

I can explain to you in a few words, by a most striking illustration, a case in point. In February of this year a man came to Pittsylvania county, Virginia (about three quarters of a mile from Milton, the town in which I live), from Newport News, and in a few days broke out with genuine small-pox. The entire family of six or seven children contracted the disease. The parents had been vaccinated, and escaped. The authorities took no notice, saying it was chicken-pox. The neighbors all came in to see this interesting case of chicken-pox, and this was not enough, but they had a grand wedding in the family, and many guests were invited. Then they had chicken-pox a plenty! On one farm I saw twenty-three cases of small-pox, and all farming operations stopped. At one time they had only two hands to carry on the work of the farm at a very busy season, entailing great loss to the owner of the

land. Still no vaccination except what I myself did privately. One very reliable man told me that he lost five hundred dollars by his inability to send around his thresher to thresh the wheat for the people.

This state of affairs continued until about June or July when, from this focus of infection, the disease got into the city of Danville, about ten miles away. Then, and not until then, did the county authorities begin to take notice of it and use means to stop it. What did they do? Use this great economic measure? No. They built a pest-house, employed physicians, guards, nurses, and isolated the sick—all necessary when small-pox comes, but expensive. Suppressing the small-pox has cost this one township in Pittsylvania county, Virginia, more than three thousand dollars. The people could have been vaccinated for six hundred dollars, giving them protection for a number of years, whereas they have since had other cases of small-pox from a new focus and may continue to have them until they use the proper preventive—vaccination.

Not only the township but a rich county may be bankrupt if this continues. Realizing our own danger from the first, not only for my town, which is immediately on the Pittsylvania line and only three-quarters of a mile from these first cases, but for the county of Caswell, which is contiguous to Pittsylvania for several miles, I brought the matter to the notice of our town council and the people were vaccinated.

Notwithstanding the small-pox has been at our doors for months, we have had no case of small-pox in the town of Milton for thirty-three years.

I also presented the danger to the county commissioners and vaccinated all persons along the Pittsylvania line, and it has borne fruit, as I will show. The result was, that notwithstanding the people were side by side, we only had six cases of small-pox, and they infected before the general vaccination—with the appalling cost of not more than one hundred dollars.

What is more convincing than these practical facts and plain figures? It is your duty—the people's—to take advantage of this cheap and innocent preventive of small-pox. It is the duty of the authorities of every town and the commissioners of every county in the State, they being the guardians of the people's moneys, to give to the people this economic and only preventive against small-pox. The time will come when the intelligence of a community will not be judged alone by the number of schools and churches, by education and morals, but also by their promptness in taking advantage of preventive medicine and pre-eminently—vaccination.

#### OLD AGE AND HOW TO ATTAIN IT.

READ BY DR. J. L. NICHOLSON, OF RICHLANDS, AT THE WILSON HEALTH CONFERENCE.

We find that even in those remote days while yet the pensive light of pastoral simplicity bathed the brow of primitive man, the great enigma of life was looked upon with reverential eyes. This reverence, with the gradual development of man, created those profound thoughts and idealistic conceptions which signalized the sublime efforts of those illustrious lights who adorned Chaldeu, and whose tenets in succeeding generations inspired the Cabalist, the Alchemist, and latterly the Rosicrucian to untiring efforts to reveal to man that hidden panacea immortalized by the pen of the poet and the lay of the minstrel. Even in our material and unpoetic age the uncertainty of life calls forth the varied phases of latent thought and philosophic speculation, engendering in our minds inexpressible yearnings to pierce the mystic veil of the occult. quently physical science is a study of universal as well as individual interest, and its pre-eminence can be no better exemplified than by being accepted as the most salient subject harbored in the mind of man. Guided by these ambitions, it is natural for the human family to aspire to that sphere of knowledge whereby they can prolong as well as preserve their precious heritage from the ravages of remorseless time. This is illustrated by the fact that even within a decade the world of science was startled by the announcement of Brown-Sequard that even wrinkled old age could again, through human instrumentality be restored to normal vigor; and that the secret involving a long and healthy life lay in the proper and systematic sub-cutaneous injection of a certain extract derived from the lamb. Yet more recently we hear another voice pronouncing goat lymph as being the genuine elixir for perpetual youth. However, even if it were possible of attainment, it would be a question whether an indefinitely prolonged life would be desirable, surely only if accompanied by unimpaired health of body and mind. Even then it would to a large extent interfere with economics unless the increase of population could correspondingly be limited in direct ratio to the increase of years. The human family are at present unfortunately too prone to disobedience to attain any great and envied age. The laws of nature are inexorable, and bear witness that vigorous and healthy life is the reward only of untiring vigilance, the prize of a constant 'struggle with the combined powers and forces which beset the human pathway and threaten the extinction of our race. If for a time, even in the prime of life, these adverse influences appear to be dormant, we may be assured

that they are lurking within the shades of a conscious security, eagerly watching for any violation or neglect of sanitary law to sow the seeds of heavy punishment.

While the preservation of health is the prime concern of every man, yet how few enjoy uninterrupted health, how few reach the period of life allotted them by nature's laws! Statistics prove to us that scarcely one sixteenth attain the full term of life, while it is lamentable to note that ninety-five per cent. meet a premature death. The census of 1890 demonstrates that less than one and one-half per cent. of the people of the United States barely reached the age of seventy and only three-fourths of one per cent. attained the age of eighty. We are further informed that quite one-fifth of all premature deaths occur in infancy, that two-fifths occur by the time the fifth year of life is completed, and that the remaining three-fifths are almost equally distributed in the intervening space between childhood and old age.

We naturally ask ourselves the question, what are the causes superinducing these sad and untimely sacrifices of life?

Why is it that so few enjoy the length of years promised us by that wise Being whose beneficent hand is ever ready to assist us, and who is ever willing to fulfill His part of the sacred covenant? The unhygienic influences of modern environments incident to dwelling in densely populated centers and crowded communities, unhealthy occupations, the everincreasing struggle for daily maintenance, and the growing burden of mental taxation are important factors in decreasing the natural resistance to disease, and afford in a general way, at least, a partial answer to the question.

The foremost cause of premature death, the one that stands forth most pre-eminent in the ranks of earthly perils is undoubtedly tuberculosis-the "consumption" of popular language. "This is a disease," says Dr. Keen, "which has claimed more victims than all the wars and all the plagues and scourges of the human race. Even since the few short years since Koch's discovery (of its special germ in 1882) over two million persons on this continent have succumbed to its fatal infection. The annual tribute of the United States to this scourge is over one hundred thousand of its inhabitants. Each year the world vields up 1,095,000, each day 300, each hour 12 of its people as a sacrifice to this plague. Of the 70,000,000 individuals now peopling these United States 10,000,000 must inevitably die of this disease if the present ratio is kept up." This cruel scourge that wreaks its slow, sad havoc among men, bereaving the world of very nearly one seventh of her people, may never be cured with any degree of certainty. Yet it is a fact of the highest importance it can be absolutely prevented. This knowledge is now vested in man, who has found that it is no longer a family disease, much less a local disease, but an infectious one, and therefore preventable, and that its specific germ is a low class of plant life, thriving best upon animal tissue and under a temperature near that of the normal human

body. In every instance the infecting germs have been received from a previous case, and that almost entirely by and through the means of the expectoration. So numerous are these germs in a person moderately advanced in consumption, that he will expectorate, we are informed, from one to five billion of them daily. With these innumerable seeds so incautiously scattered in the home, as well as by the wavside, is it surprising that a few should survive and find lodgment in the system of an unsuspecting member of such a family, or even a neighbor? The consumptive's sputum once dry and pulverized, yet loaded with living germs, floats through the air as dust, and when inhaled by another whose physical condition affords a congenial soil for its growth, will invariably produce consumption. The patient, through his weary months and years of suffering, is thus a constant menace to those about him, for should your resisting powers to this poison fall below par, from any cause, you will likewise fall a victim to this sad and fatal malady. The sputum in liquid mass is, however, not a means of conveyanc. Flügge has very recently shown us that the spray or minute droplets which are expelled during a siege of severe coughing by consumptive patients play a certain role in the spread of the disease, however.

There are two methods of suppressing or preventing the propagation of this malady-private and public. First, if it were possible to destroy all expectorations, and avoid, or thoroughly cook all tubercular food products, the problem would in a very large degree be solved. All preventive measures must have for their object the complete disinfection or destruction by fire of all tuberculous discharges while in the liquid state, so that the food we eat, the water we drink, and the air we breathe will thereby not become contaminated. Following this, all sputum must be collected in a proper vessel and destroyed. A suitable pocket flask for out-door patients has been provided which is quite a salient feature in the list of precautions, as well as the holding of a handkerchief to the mouth during an attack of coughing. Many domestic animals, especially the cow, are susceptible to this disease. There is scarcely a doubt that the heavy mortality in early childhood from tuberculous affections is due to the use of unsterilized milk from the tuberculous cow, for congenital tuberculosis is so rare that it hardly can be termed a factor in the production of these cases. A great peril confronts humanity the world over in the existence of widespread bovine tuberculosis. We learn this from competent investigators who are uniform in their statements that quite twenty-five per cent. of the milk cows are affected with this complaint. In proof of this, the scientific examination recently made comprising sixteen dairies showed that the milk of nine possessed the germs of tuberculosis. This evil could be well-nigh eradicated if proper State and municipal regulations were made and enforced, both with reference to the milk supply and the sputa of the sick. As to the former the only correct solution is to suppress the sale or use of any milk that is not certified to by proper authority as being derived from cows known to be free from tuberculosis.

The question of homes or hospitals in a suitable climate for the isolation and treatment of these patients is one now receiving much attention. The results thus far have been highly gratifying. Leprosy has been practically effaced from civilization by this method of segregation, and while humanity looks upon this disease in twofold horror, yet they will associate, eat, drink and sleep with consumptives, regardless of the fact that tuberculosis is tenfold more contagious. Through the method of quarantine, yellow fever, Asiatic cholera and other infectious diseases have been shorn of their horrors and no longer "gather their rich harvest of death."

In a paper of this character it would be unwise and impractical to attempt to trace in detail the almost innumerable diseases which afflict humanity and work to the prevention of long life. For convenience, however, they can with few exceptions be placed in two classes. Those due to vegetable or animal parasites, and those produced by chemical causes. Under the former we find the eruptive, contagious or infectious fevers, such as measles, scarlatina, small-pox, typhus, typhoid, diphtheria, tuberculosis, and malaria, itch, favus, etc.

Under the latter, through chemical causes like alcohol, lead, nicotine and other extrinsic poisons, as well as those arising from poisons that are produced within the economy either as the result of normal or abnormal chemic activity with insufficient elimination, such as gout, rheumatism, headache, chlorosis, albuminuria, uremia, asthma, etc.

With these many varied evils foreshadowing our pilprimage, the supreme hope for a long life and suffering humanity is in preventive medicine. Statistics showing the gradually increasing success of the blood serum therapy and sanitary precautions go to prove that by proper management the greater number of human ailments may be entirely prevented. The principles of blood serum therapy were first applied in medicine by employing vaccination in the prevention of small-pox by Jenner more than a century ago, yet they were not at all understood scientifically until Pasteur a few years ago made his renowned discoveries concerning the protective inoculation of animals. Behring's law establishes the fact that "The blood and blood serum of an individual which has been artificially rendered immune against a certain infectious disease, may be transferred into another individual with the effect to render the latter also immune, no matter how susceptible this animal is to the disease in question." Our knowledge concerning these antitoxins is as yet somewhat vague and limited, and while unfortunately we cannot clearly discern the intricacies attending their creation, vet our recent experiments in themselves bear conclusive evidence of their inestimable value in the cure and prevention of many human diseases. Their use is steadily guiding us toward a true science of therapeutics and to the solution of some of the deepest mysteries of life, health and disease whereby we may ultimately prevent premature death and fully realize those cherished aspirations for a long and vigorous life. We are not overzealous when we assert that the results of the antitoxin treatment, as thus far inaugurated, leave no space to doubt or contend its final life-giving powers to our race. To say nothing of its specific powers in the treatment of tetanus, snake-bite, erysipelas, hydrophobia and some other affections, the results obtained in relieving that most dreaded of all the diseases of childhood, diphtheria, gives a slight idea of its wonderful value. Through its use in this disease scarcely five patients succumb out of every one hundred, when without it not less than thirty in the same proportion prove fatal. With our improved knowledge of to-day as to the cause of infectious diseases we are enabled to rescue thousands from an untimely grave, and the future in this direction is of such portentous interest that it is impelling medical science to its most intense activity. Statistics corroborate our statements with reference to the promotion of longevity, and from them we note that twenty of our principal cities, with a population of 7,500,000, establish the fact that since 1838 the mortality from small-pox has been reduced thirty-six per cent.; that of typhus fever since 1881, ninety-five per cent.; that of typhoid fever sixty per cent., ranging from the same date, and from 1860 we find the decrease in scarlet fever reaching eightyone per cent., and tuberculosis forty-six per cent. We can safely flatter ourselves, with sincerity and truth, that the war now being unceasingly waged against disease and the foul conditions which foster it will preserve more lives than all the wars in the mystic future will destroy.

Sanitation, like charity, "should begin at home." Cleanliness, systematic care and industry have been truthfully defined as being the chief characteristics of scientific house-keeping. Every relation that woman may bear to society, be it wife, mother, house-keeper, cook or nurse, impels her to be a true sanitarian. Whether our womanhood realize it or not, it is unmistakably true that they are largely responsible for a great deal of the sickness and debility in their homes. Not only so, but the thoroughly efficient sanitary condition of the city, town or village depends in a high degree upon the habits of cleanliness practiced in the individual home, and with an increased knowledge of sanitary science, and an intelligent application of its principles, the home will not only be greatly improved, but life will be appreciably lengthened.

Let our minds now rest upon the question of old age, its attendant conditions and necessary inconveniences. It goes without saying that if our declining years mean naught but ever-increasing discomfort and physical suffering they are but additional burdens, and bring with them nothing to be desired. Premature old age unmistakably indicates that the person thus burdened, or his ancestors, it may be even to the third or fourth generation, have sinned against their physical welfare, and are but reaping the reward of their transgressions.

A theory of old age recently advanced by Metchnikoff, the eminent geologist and bacteriologist, asserts that the organs of the body are composed of two kinds of cells, the common cells and the noble cells. the noble cells are adapted to the special function of the organ of which they form a part, while the common cells are purely connective, holding together the noble cells. Between these two kinds of cells there is a continual conflict, and while the noble cells are stronger and successfully resist, we have mental and physical vigor. Yet eventually the contest exhausts them, and the preponderance passes to the common cells; this signalizes the beginning of old age. Now, while the noble cells are crowded more and more, the common ones are growing in size at their expense and interfering with the functions of the organ, hence the abnormal, diseased appearance of the organs and the increasing difficulties in the way of living. In view of this, ultimately the performance of the functions becomes impossible, and we have death. The professor suggests that it is within the range of possibility to prevent this encroachment of one cell upon the other by inoculation, or some other process, and thereby preserve the equilibrium between the cells and protect old age from its infirmities. This is but another way of asserting that nutrition equal to the expenditure would prolong life, a proposition in every wav true.

It is generally conceded that the chief cause of senile failure is to be found in defective circulation, the nutrition of the brain, the nervous system, and indeed the whole body suffering from the incapacity of the heart and the rigidity and narrowing of the blood vessels through atheromatous and other allied conditions. This is seen in the lazy and torpid circulating movements of aged people, so painful in contrast to the bounding pulses of vigorous youth, and readily accounts for the coldness of their hands, feet and limbs, and their failure in physical and intellectual vigor. Clinical observation has long since shown that calcareous or chalky degeneration of the arteries is a common and serious factor in the causation of this insufficient circulation in advanced life. "Man begins," says Kennier, "in a gelatinous condition; he ends in an osseous or bony one-soft in infancy, hard in old age. By the gradual change in the long space of years the ossification comes on; but after middle life is passed a more marked development of the ossific character takes place. course these earthy deposits, which affect all the physical organs, naturally interfere with their functions. Partial ossification of the heart produces the imperfect circulation of the blood which affects the aged. When the arteries are clogged with calcareous matter there is interference with circulation, upon which nutrition depends. Without nutrition there is no repair of the body. To repair the waste of the body so that the exquisite equipoise called perfect health may be maintained and the decay and blockage which advances with age may be kept at bay is to prolong our years."

It has been said, and most truthfully so, that a man's life expectancy can be estimated not so much by the length of years already to his credit, but by the condition of his circulation—by the amount of health and elasticity in the walls of his blood vessels. The sad mortality occurring in the latter half of life from apoplexy (the rupture of a cerebral blood vessel) would appear to corroborate the truthfulness of this observation.

The important question confronting us then is, how shall we meet these progressive degenerative changes and diminish their necessary interference with the powers of life? If lime and these earthy salts found stored up in the senile tissues be the insidious and dreaded powers of old age (and we must all admit they are an important factor), then to diminish their entrance into the system must tend to the prolongation of our existence. Almost everything we eat contains these calcareous salts, more especially meat and bread, which are very prolific sources of these mischievous accumulations. As Kennier observes, a diet consisting principally of fruit is best and most desirable for people advancing in years, for the reason that, being deficient in nitrogen, the ossific deposits so much to be dreaded are more likely to be suspended. Fruits, fish, poultry and the flesh of young animals contain less of these objectionable elements, and are consequently preferable. The free use of distilled water, with dilute phosphoric acid, is strongly advocated as means to retard old age. Now, as carbonate of lime exists in nearly all drinking water, its distillation would entirely eliminate this noxious element and besides cause the water to become a decided solvent of the various earthy salts already in the system; therefore its daily use would seem to be a most important means in preventing the calcareous degeneration of the arteries and tissues. Valuable, however, as may seem the use of distilled water in latter life, its use may be abused, for recent investigation has shown that by long and continuous use it may become injurious, from the fact that this very property of extracting salts from animal tissues will cause them to swell by inhibition.

In this age of serious and mature thought and scientific investigation diet is awarded a place of no small magnitude, not only in the treatment of disease and its prevention, but in the extension of life as well. When it is fully realized that the majority of chronic diseases are due in great part to excesses in eating and drinking, great and lasting benefits will accrue to our people. Alexander Haig, in his remarkable book on "Uric Acid as a Factor in the Causation of Disease," proves conclusively the close relationship existing between the use of foods containing uric acid in an appreciable amount or capable of producing it within the body to an excess, and the production of headache, mental depression, melancholia, epilepsy, asthma, gout, rheumatism and other various affections which decrease life as well as cause great misery. The class of food containing this poison in greatest quantity is tea, coffee and cocoa, and the class containing elements which may produce it to a damaging excess

within the economy are the animal meats, their soups and extracts. By sharply decreasing, if not entirely avoiding, their use we may escape many derangements of health, not the least of which is the deleterious power exerted by this poison over the circulation, for it intensifies that damaging characteristic of old age, obstruction to the capillary circulation. To avoid these dangers, Haig and his followers condemn the use of all stimulants and all animal food, except milk and its products, cheese and butter, also as well entering a plea for vegetarianism, claiming that the vegetarian has superior powers of endurance and better health than those devoted to the use of meats. Both, then, by the theory of calcareous accumulations and by that of uric acid poisoning, animal meats work serious consequences to those addicted to their excessive use. There is no room to doubt that our people are bringing untold trouble upon themselves from a want of care along this line.

It is now claimed by many observers that we have in "nature's vegetable meat," the nut, a perfect and far more healthy substitute for the proteid nutriment afforded by flesh meats. Even the common peanut, according to Dr. Kellogg, contains nearly fifty per cent. more of this important element of food than the same weight of the best beef. Now, the proteid or albuminoid element of food so richly stored in the nut contains nitrogen and supplies the means for the foundation and repair of the tissues, brain, muscles, nerves, glands, blood corpuscles and the resisting force against disease. Protoplasm, the center of cell life, is formed of and sustained by proteids. They are therefore the most important elements in our diet, and are the only ones, when used alone, that are capable of sustaining life. In France nuts are largely used as an article of diet, especially by the indigent classes.

In the whole catalogue of food substances, there are none more wholesome than fruit, and with proper precaution it may be used in almost any condition of disease as well as health. Remote Scandinavian traditions represent the apple as the food of the gods, who when feeling the approach of old age and its attending infirmities sought the apple as being a medicine leading to renewed activity of body and mind.

I would not attempt to formulate a code of inflexible hygienic rules for the preservation of mental and physical health, but a few more suggestions fall within the scope of this paper. Along with imprudent eating inactivity of both body and mind tends towards physical degeneracy. Proper rest strengthens and invigorates, inactivity weakens and destroys. Proper attention to deep breathing and systematic exercise are important factors tending to retard premature old age, as by increasing the circulation of the blood, and therefore the nutrition of the body, we establish a firmer prestige. Further, the abandonment of our regular and accustomed vocations, retiring entirely from business life, especially as we enter old life, is a dangerous experiment, frequently entailing disaster of no slight importance.

The suggestion of Dr. Hermann Heber, that for most people beyond the age of fifty more than six or seven hours of sleep in twenty-four is calculated to injure, would seem to be true, as well as feasible, for in sleep the circulation becomes sluggish, torpid and diminished, so from this fact prolonged sleep tends to intensify that most serious defect incident to old age, namely, insufficent nutrition arising from the incapacity of the heart to carry on the normal circulation through the narrowed and inelastic blood vessels. Wakefulness hitherto has been regarded as indicative of senility, but according to this theory it is a conservative symptom, and is but nature's effort to shield the aged from physical and intellectual decay.

Without attempting to be exhaustive, I have endeavored within the space allotted me to set forth such truth and facts and offer such suggestions as may be of service in guiding you through life, so that when its inevitable downward stage is upon you many of its necessary disadvantages may be mitigated and others altogether avoided.

#### DRINKING WATER.

READ BY DR. W. T. PATE, OF G1BSON, N. C., AT THE WILSON HEALTH CONFERENCE.

It has been my observation that there is no surer way to displease a friend, or block the avenue to friendly relations with a stranger, than to condemn his drinking water. Associations have invested our water supplies with a sentiment next to home itself. It seems hard to realize that the spigots that have administered to our wants and necessities in days of health and pleasure could in an evil hour dispense sickness and bereavement; or that the well that had furnished water to raise a family could also exterminate it. It is not my purpose to rob this necessary element to our existence of any of its sentiment, but to try to make it more deserving by calling attention to the fact that the good and bad are so thoroughly mixed in all things that it even applies to water supplies.

All drinking water, unless it be that from deep artesian wells, contains bacteria, or unicellular vegetable organisms, which are like vegetables of a higher type, in that some kinds are harmless—even wholesome—while other kinds are poisonous. We speak of water as being contaminated when it contains some of these poisonous organisms. The chief source of the bacteria found in drinking water is from the soil. For our purpose we will speak of the modes of contamination as direct and indirect. Direct when the dangerous bacteria are introduced into the water from first hands. Indirect when the bacteria are deposited upon the earth and then carried into the drinking water by the rain that falls upon the surface or the water that percolates through the soil.

About seven per cent. of the population of North Carolina obtain their drinking water from public supplies, the source of nearly all of which is surface-water exposed to both direct and indirect contamination. But this will hardly be accomplished before an educated public sentiment demands it. When the consumers of public water fully realize that pure water and a good health record go hand in hand to attract desirable home-seekers and capital; when they thoroughly appreciate the fact that their own prosperity, happiness, health and lives depend upon the purity of their drinking water; when they feel that the suffering and death from typhoid fever in the community are due to some one's carelessness and might be prevented—then they may be depended upon to see that every precaution known to sanitary science is thrown about the public water supply.

The men occupying the best position to teach these truths of sanitation and create this public sentiment are the physicians of the town. Any town having a public water supply that is causing an unusual number of cases of typhoid fever and other water-borne diseases is a reproach to the physicians of the community. Every man of means and influence has a family physician, and if that guardian of the health of the home will take the pains to impress upon his patron the importance of pure drinking water, he will not only demand it, but will support any reasonable measure to improve and protect the public supply. I say this with all due respect to our efficient State Board of Health. Its work is gaining in appreciation among the people, and is attracting attention beyond our own borders. I have heard its work commended from the State of Maine. But the Board can at best only direct, map out the work and suggest plans. If the highest practical good is to be accomplished for the community and the State, the Board must have the hearty, active co-operation of her intelligent citizens, and especially that of the medical profession.

The remaining ninety-three per cent. of our population represent the inhabitants of the smaller towns and the country, who are less fortunate than their city cousins, in that each home has its own supply, and must bear the expense and exercise the necessary care to keep their drinking water in a safe condition or suffer the consequences. The chief burden of these supplies is sustained in complying with the last named condition. These supplies consist principally of dug or open wells and driven wells. The latter are safer, since they are exposed only to indirect contamination. Open wells from which the water is brought to the surface in buckets are filthy and dangerous. Any one who has seen one of these wells cleaned out knows what a quantity of filth finds its way into the water from the open top. Every one that draws a bucket of water handles the wet bucket and chain and sends it down to be washed off by the water in the well, which amounts to about the same thing as washing the hands in the drinking water, not to speak of contamination by mos-

quitoes and other insects. Such wells undoubtedly cause many cases of gastro-intestinal troubles, not usually fatal, except among small children. And if typhoid fever is carried to a home using an open well it takes intelligent management to prevent the drinking water from becoming contaminated, and servants do not always possess the necessary intelligence, as was shown in a case that came under my observation at a farmhouse two miles east of Gibson.

This well had been in use more than five years. It was the boast of the owner that he had the best water in his section, and that there had never been a case of typhoid fever on his plantation. During the winter of 1895 a son was carried to this home with a well developed case of typhoid fever. A nurse was employed at once, the patient isolated, and the physicians in attendance thought every precaution had been taken to protect the other members of the household; but in about three weeks two other members of the family were sick with the fever. The physicians were puzzled until it was learned that the launderer had remarked that the doctors might know something about medicine, but that they didn't know anything about washing; and instead of carrying the linen, bundled by the nurse, from the sick-room to the kettle and boiling for a half hour before washing, as directed by the physicians, he had first washed the clothing in warm suds, drawing his own rinsing water at the open well. This act of carelessness and ignorance cost the life of one member of the family.

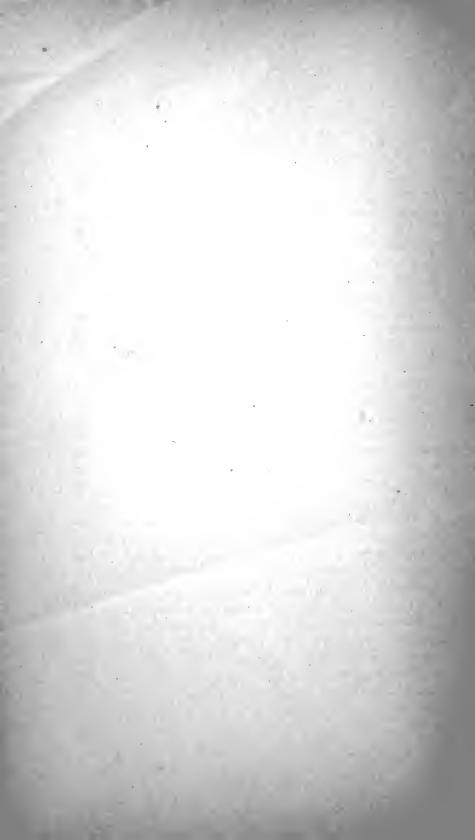
Another case showing the extreme liability of open wells to typhoid contamination occurred just across the line from Gibson in South Carolina. Another plantation home—an open well with sweep, hand-pole and bucket, a bench adorned by a row of tubs, a wash-pot, and a mudhole with a few brickbats in it—all within a radius of fifteen feet—the counterpart of many domestic water supplies in North Carolina to-day.

There had been no case of typhoid fever here. During the winter of 1884 a married daughter died of typhoid fever in another county. Her sick child was carried by its grandmother to this home, some fifteen miles away. The child died; members of the household and neighbors and friends who visited them in due time began to have fever; an epidemic broke out in the community; and if it were possible for any one to state the number of cases that were carried directly and indirectly from that well, the cost of life and property to the community, it would seem incredible. I know that some families were so reduced by sickness, death and debt that their homes went into other hands.

Where it is practicable only driven wells should be used to obtain water for domestic purposes. Where it is necessary to dig wells, after an unfailing flow of water is secured, terra-cotta well-pipe should be placed in the well and the well filled in, the top closed and the water raised by suction. Where the terra-cotta pipe is too costly a two-inch iron pipe can be carried to the bottom of the well, this filled around with stones above the

level of the water, three feet of chalk and clay packed in above the stones and the well filled with clean earth. This will prevent direct contamination and lessen the attraction for surface-water. Indirect contamination can be prevented by a clean soil. A circle with a radius of one hundred feet should be drawn around the well and the perimeter designated the danger line, and nothing that would pollute the soil should be allowed within this circle-not even an open well. I have seen driven wells placed within a few feet of an open well to improve the water supply. It is needless to say that there was no improvement. All wastewater from the well, wash basins, etc., should be conveyed beyond the danger line in water-tight pipes. Another important matter is surface drainage. The stables, pig-styes, etc., should be so placed on the premises that the surface drainage will be away from the well. One hundred feet, or any other reasonable distance, will not protect a well on a slope below polluted soil. I have seen a driven well twenty-eight feet deep on a slope three hundred feet away from a basin polluted for a generation contain intestinal bacilli from the first. Another instance is that of a factory village built on an eastern slope. Near the brow of the hill is a row of out houses. One hundred feet or more down the grade is a broad street, a row of houses on either side of the street, and driven wells along its centre, more than one hundred feet from the out-houses, along the brow of the hill. For the first few years the village was not infected with typhoid fever. In Décember, 1895, I was asked by the president of the company to see a boy in the village that was thought to be crazy. I found him sitting up, temperature 104, delirious, with other symptoms of typhoid fever. The attention of the president of the company was called to the bad arrangement of the village, and warned of the danger. A meeting of the directors was called, but nothing was done. The number of cases have increased year by year until now. In September I was informed by one of the three physicians who practice among the operatives that he then had thirty cases of typhoid fever under treatment in the village, and that the death rate was high. This is due to the surface-water from the row of out-houses along the brow of the hill running down the slope and infecting the wells.

In conclusion, I would say: Use only underground wells; raise the water by suction; see that the soil is free from pollution within one hundred feet radius of the well, and drain all polluted soil on the premises away from the well. By a strict observance of these simple precautions it is possible, in a primitive soil, to obtain water with less than 100 harmless bacteria per cubic centimeter.



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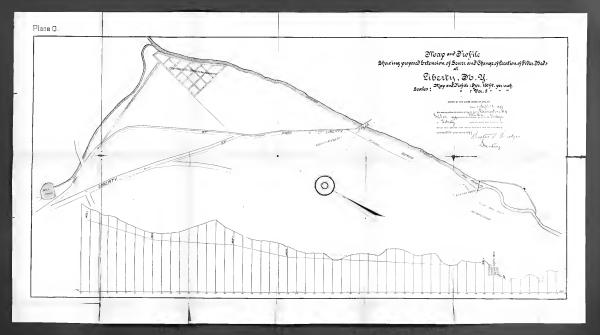


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#### NINTH BIENNIAL REPORT

OF THE

#### NORTH CAROLINA

### BOARD OF HEALTH,

1901-1902.

PALEIGH .

E. M. UZZELL & Co., STATE PRINTERS AND BINDERS.



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E. M. UZZELL, STATE PRINTER AND BINDER. 1902.

#### MEMBERS OF THE BOARD.

#### ELECTED BY THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA. S. Westray Battle, M. D. .....Asheville. Term expires May, 1907. HENRY W. LEWIS, M. D. .....Jackson. Term expires May, 1907. J. L. Nicholson, M. D. .....Richlands. Term expires May, 1905. W. H. WRITEHEAD, M. D. .....Rocky Mount. Term expires May, 1905. APPOINTED BY THE GOVERNOR. W. P. IVEY, M. D.\_\_\_\_Lenoir. Term expires May, 1907. RICHARD H. LEWIS, M. D., Secretary ------Raleigh. Term expires May, 1907. George Gillett Thomas, M. D., President ......Wilmington. Term expires May, 1905. Francis Duffy, M. D. ......New Bern.

### LIST OF COUNTY SUPERINTENDENTS OF HEALTH IN THE STATE OF NORTH CAROLINA, DECEMBER 31, 1902.

Alamance	Dr. H. R. Moore.
Alexander	Dr. C. J. Carson.
Alleghany :	
Anson	Dr. J. H. Bennett.
Ashe	Dr. J. W. Colvard.
Beaufort	Dr. John G. Blount.
Bertie	Dr. H. V. Dunstan.
Bladen	Dr. L. B. Evans.
Brunswick	Dr. J. A. McNeill.
Buncombe	Dr. E. B. Glenn.
Burke	Dr. J. L. Laxton.
Cabarrus	Dr. R. S. Young.
Caldwell	Dr. A. A. Kent.
Camden	Dr. J. L. Lister.
Carteret	Dr. F. M. Clark.
Caswell	Dr. S. A. Malloy.
Catawba	Dr. Geo. H. West.
Chatham	Dr. H. T. Chapin.
Cherokee	Dr. Oscar Patton.
Chowan	Dr. T. J. Hoskins.
Clay	Dr. J. O. Nichols.
Cleveland	Dr. B. H. Palmer.
Columbus	
Craven	Dr. N. H. Street.
Cumberland	
Currituck	Dr. H. M. Shaw.
Dare	
Davidson	Dr. Joel Hill.
Davie	
Duplin	Dr. O. F. Smith.
Durham	Dr. N. M. Johnson.
Edgecombe	0.
Forsyth	
Franklin	Dr. E. S. Foster.
Gaston	
Gates	
Graham	
Granville	Dr. S. D. Booth.

Greene	-Dr. Joseph E. Grimsley.
Guilford	-Dr. Edmund Harrison.
Halifax	-Dr. I. E. Green.
Harnett	-Dr. O. L. Denning.
Haywood	Dr. S. B. Medford.
Henderson	-Dr. J. G. Waldrop.
Hertford	-Dr. J. H. Mitchell.
Hyde	Dr. E. H. Jones.
Iredell	-Dr. R. A. Campbell.
Jackson	Dr. R. L. Davis.
Johnston	
Jones	-Dr. S. E. Koonce.
Lenoir	
Lincoln	-Dr. T. F. Costner.
McDowell	
Macon	_Dr. F. L. Siler.
Madison	-Dr. Jas. K. Hardwicke.
Martin	Dr. W. H. Harrell.
Mecklenburg	Dr. C. S. McLaughlin.
Mitchell	
Montgomery	_ Dr. M. P. Blair.
Moore	Dr. Gilbert McLeod.
Nash	Dr. J. P. Battle.
New Hanover	Dr. W. D. McMillan.
Northampton	_Dr. H. W. Lewis.
Onslow	Dr. E. L. Cox.
Orange	Dr. D. C. Parris.
Pamlico	Dr. H. P. Underhill.
Pasquotank	Dr. J. E. Wood.
Pender	_Dr. R. J. Williams.
Perquimans	Dr. C. C. Winslow.
Person	Dr. J. A. Wise.
Pitt	Dr. C. O'H. Laughinghouse.
Polk	
Randolph	_Dr. S. A. Henley.
Richmond	Dr. F. J. Garrett.
Robeson	Dr. H. T. Pope.
Rockingham	Dr. Sam Ellington.
Rowan	Dr. W. L. Crump.
Rutherford	
Sampson	Dr. R. E. Lee.
Scotland	Dr. A. W. Hamer.
Stanly	Dr. V. A. Whitley.
Stokes	Dr. W. V. McCanless.
Surry	Dr. John R. Woltz.

Swain	Dr. J. A. Cooper.
Transylvania	Dr. C. W. Hunt.
Tyrrell	
Union	Dr. John M. Blair.
Vance	Dr. H. H. Bass.
Wake	Dr. J. J. L. McCullers.
Warren	Dr. E. M. Gayle.
Washington	Dr. W. H. Ward.
Watauga	Dr. T. C. Blackburn.
Wayne	Dr. Williams Spicer.
Wilkes	Dr. W. P. Horton.
Wilson	Dr. W. S. Anderson.
Yadkin	Dr. M. A. Royall.
Yancey	Dr. J. L. Ray

#### LETTER OF TRANSMISSION.

NORTH CAROLINA BOARD OF HEALTH,

OFFICE OF THE SECRETARY,

RALEIGH, January 3, 1903.

His Excellency, Charles B. Aycock, Governor of North Carolina.

Sir:—In accordance with section 3, chapter 214, Laws of 1893, I have the honor to present for transmission to the General Assembly this, the Ninth Biennial Report of the North Carolina Board of Health.

With great respect,

RICHARD H. LEWIS, M. D., Secretary and Treasurer.

#### NINTH BIENNIAL REPORT

OF THE

### NORTH CAROLINA BOARD OF HEALTH,

1901-1902.

The people of our State during the past two years have been spared any serious epidemic of disease, with one exception. This exception is small-pox, which has been with us for just five years. A full and detailed consideration of this subject will be found in the two annual reports of the Secretary made to the conjoint sessions of the Board of Health with the State Medical Society of 1901 and 1902, and in a special section of this report under that heading.

While there has been progress, we think, on all sanitary lines since our last report, slow and halting it is true, in some directions, there undoubtedly has been an advance. This is to be noted particularly in the biological work done for the Board during the past two years in the laboratory and by the Biologist of the Department of Agriculture. Although this work was inaugurated within the period covered by our last report, in December, 1900, it has been done practically entirely during the past two years. We predicted that this enlightened and patriotic action of the Board of Agriculture, in extending aid to the Board of Health in the performance of this very important work, which was beyond the latter's resources, would be of great benefit to the people. The result has, we believe, shown this to be true.

Another advance was marked by the enactment by the General Assembly of 1901 of the law creating the State Board of Embalming, thereby enabling us to take our position with the most progressive States in the matter of properly regulating the transportation of dead bodies, especially of those dying of contagious or infectious diseases. A copy of this law will be found under "Legislation." Sanitary inspections of State institutions, of public water supplies and of municipal and private institutions, upon request, have been made, and reports thereon are given in their proper places.

No inconsiderable part of the work of the Board has already set forth in the monthly *Bulletin*, which has not failed to appear during the two years. This publication, we have reason to believe, is much more read than formerly, and its influence as a medium of instruction has in so far been increased.

Reports on vital statistics, and other subjects coming within our jurisdiction, will be found below.

#### MEETINGS OF THE BOARD.

## MINUTES OF THE ANNUAL MEETING OF THE BOARD AT DURHAM.

Hotel Carrolina, May 21, 1901.

The annual meeting of the Board occurred, as required by law, at the same time and place as that of the State Medical Society, May 21-22, at Durham. All the members were present. Doctors Thomas and Lewis were re-elected President and Secretary, respectively. The Secretary reported officially the favorable action of the State Board of Agriculture on the request to have bacteriological analyses of suspected drinking water made in their biological laboratory, and the following resolution was adopted:

WHEREAS, The State Board of Agriculture responded favorably to the request of the State Board of Health made at its last annual meeting to provide in its biological laboratory for the free bacteriological examination of drinking waters suspected of conveying disease, especially of typhoid fever; and

WHEREAS, The work of this kind already done shows even thus early its great value to the people, actual and prospective; now, therefore, be it

Resolved, That the State Board of Health desires to put on record its appreciation of this additional evidence of the progressive and enlightened spirit displayed by the State Board of Agriculture in its work, and to express its belief that the expenditure for this purpose will be returned many fold to the people of the State in the saving of many valuable lives and great loss of time from long illness, and in the education of the people as to the importance and value of sanitation.

In compliance with the act of the last Legislature creating a State Board of Embalming, to be "appointed by the State Board of Health, three of whom shall be members of the State Board of Health, the remaining two shall be practical embalmers," Messrs. J. M. Harry, of Charlotte, and H. W. Simpson of New Bern, practical embalmers, were elected for five and four years, and Drs. Battle, Duffy and Lewis, R. H., for three, two and one years, respectively. A committee of three composed of Henry W. Lewis, M. D., J. L. Ludlow, C. E., and the Secretary, was appointed to prepare a new edition of the "Instructions for Quarantine and Disinfection."

The Treasurer made his annual report and Drs. Ivey and Duffy were appointed a committee to audit the same. They reported it correct.

#### CONJOINT SESSION

WITH THE

#### STATE MEDICAL SOCIETY AT DURHAM.

MAY 22, 1901.

The conjoint meeting with the State Board of Health was called to order at 12 m. of the second day. President George G. Thomas in the chair.

Dr. Thomas spoke as follows:

I cannot let this opportunity pass, as the presiding officer of this meeting, without saying a few words out of the fullness of my heart for the good man, Dr. Charles J. O'Hagan. His figure was as striking as his character. He was eminently a good lover and a good hater, and I consider these good qualities. He yielded to no man in what he believed was law and order. He loved and upheld his friends whenever an opportunity came for the furtherance of whatever they sought to protect, and he stood a strong barrier against the encroachment of wrong, not only in the Society but in the world in which he lived. During the thirty years I have been connected with this Society I have no recollection of hearing any man speak unkindly, less than lovingly and admiringly, of this good man who has left us. It was my good fortune to know him intimately, and I thank God for it. I know I am a better and a truer man for that association.

# ANNUAL REPORT OF THE SECRETARY OF THE STATE BOARD OF HEALTH, MAY 1, 1900—MAY 1, 1901.

The past year has been marked by greater progress in our efforts to protect the public health than any equal period in the history of the Board. Our work in trying to educate the public mind up to the importance and value of sanitation in its various forms is beginning to tell. The evidence of this is seen in the provision made by the Department of Agriculture for the free biological analyses of suspected drinking waters, in addition to the chemical analyses it has been making for years; in the valuable amendments to our health law made by the last Legislature—and made not grudgingly but in a liberal and enlightened spirit; in the enactment of a law regulating the embalming of dead bodies; in the increase in the number of public water supplies—eight, or thirty-three per cent. actually, and many more prospectively; and in the greater interest taken by the people generally in such matters.

The full report of the work of the Board in detail from our last meeting at Tarboro to January 1, 1901, will be found in the Eighth Biennial Report, a copy of which will be gladly mailed to any one desiring it, and to which those interested are referred.

#### WATER ANALYSES.

The value of a bacteriological examination in locating the cause of typhoid fever in contaminated or infected drinking water is now thoroughly established. There are probably from eight to ten thousand cases of typhoid fever in the State In many instances a number of cases following every year. one another at longer or shorter intervals have their origin in a common infected well or spring. If the drinking water supply of the first case should be promptly examined bacteriologically, and the fact of its infection demonstrated, a number of the later cases could be prevented. Realizing this, and desiring to bring it directly to the attention of the profession, together with the fact that the examination could be obtained free of charge, I mailed to every physician in the State the following letter, in addition to publishing essentially the same thing in The Bulletin, which they also received:

Raleigh, N. C., January 20, 1901.

My dear Doctor:—As you will have noticed in *The Bulletin* for December, mailed you the first of the month, the State Agricultural Department has made provision for the bacteriological examination of drinking waters suspected of carrying disease. Since the article in *The Bulletin* was written, the Honorable Commissioner of Agriculture has ruled that all applications for such analysis must be made to the Secretary of the State Board of Health and approved by him before the work will be done, for the purpose of guarding his laboratory against too numerous applications based on mere curiosity. As the County Superintendent of Health is the recognized health officer of every county, application should first be made to him, giving the reasons for suspecting the water, with request that he approve and forward to me, and upon receipt I will, if satisfied as to the necessity for the analysis, forward permit direct to you. In urgent cases application may be made direct to me.

Whenever a case of undoubted typhoid fever occurs in a family, their drinking water should be analyzed bacteriologically as soon as possible. By promptly having this done many cases of that disease would be prevented. So, if you have any cases of typhoid fever in your practice, send for permit, stating in your application the number of cases and the conditions.

Very truly yours,

RICHARD H. LEWIS,
Secretary.

My efforts in this direction have, I regret to say, borne but little fruit, only thirteen applications for analysis having been made by physicians in nearly four months. The indifference of the profession in this matter I find it difficult to explain, for while it is the duty of the physician to cure disease, it is none the less his duty to prevent it when he can—as all worthy of their calling will, of course, admit. If we do not avail ourselves of the privilege offered us, it will, I fear, be withdrawn. Unless the value to the people of the State of this work can be demonstrated to the satisfaction of the Board of Agriculture it will surely be discontinued, and when it is too late we will realize what we have lost. I hope, therefore, every one who hears or reads this will make it an invariable rule in every case of typhoid fever, immediately upon making the diagnosis, to write me for a permit and a sterilized bottle. While in the

letter, in order to show proper respect for the office of county superintendent of health, and perhaps protect the Department of Agriculture from occasional unnecessary work, I made it a condition of the issuance of the permit that the application, except in urgent eases, should first be made to that official, who would approve and transmit to me, I have since abandoned it as being cumbersome and promotive of delay. As a matter of fact, all these cases are urgent eases, and a direct application to me will secure the permit and bottle at once.

#### LEGISLATION.

Realizing from our experience in the management of small-pox during the past three years that our law of 1893 was defective in a certain vagueness as to the duties and powers of county authorities in matters pertaining to the public health, I prepared and secured the passage by the General Assembly of the act amendatory thereto given below. This was done, I am glad to say, without difficulty, as was to have been expected of a body of men of such intelligence and character as those composing the recent Legislature. Although nearly all the members supported the bill, I feel that special acknowledgment should be made to Senators Justice and Henderson, of the Judiciary Committee, for legal advice, and to Dr. Speight of Edgecombe, in the Senate, and Dr. Stevenson of Iredell, in the House, for valuable aid.

The following is the act:

AN ACT TO AMEND AN ACT RELATING TO THE BOARD OF HEALTH, CHAPTER 214, LAWS OF 1893.

The General Assembly of North Carolina do enact:

Section 1. That section 2 of chapter 214, Laws of 1893, be amended by striking out in line two the words "two years" and inserting in lieu thereof the following: "two for four years and two for six years and their successors for six years," and by striking out in line five the words "two years" and inserting in lieu thereof the following: "one for two years, two for four years and two for six years and their successors for six years."

Sec. 2. That section 4 be amended by striking out in lines three and four, respectively, the word "two" and inserting in lieu thereof the word "six."

Sec. 3. That section 5, as amended by chapter 201, Laws of 1897, be stricken out and the following substituted therefor:

"Sec. 5. There shall be an auxiliary board of health in each county in the State, whose function shall be, upon the call of the chairman of the board of county commissioners, to advise the county authorities in all matters pertaining to the public health. These boards shall be composed of all registered physicians resident in the county. From this board two physicians shall be selected, one by the chairman of the board of county commissioners, and one by the mayor of the county town, who, together with the board of county commissioners, shall constitute the county sanitary committee, of which committee the chairman of the board of county commissioners shall be ex officio chairman. Their term of office shall be con-terminous with that of the commissioners with whom they serve, and when on duty they shall receive the same compensation as is received by the county commissioners. The county sanitary committee shall have the immediate care and responsibility of the health interests of their county. They shall make such rules and regulations, pay such fees and salaries and impose such penalties as in their judgment may be necessary to protect and advance the public health. And any person violating such rules and regulations shall be guilty of a misdemeanor, and may be fined not exceeding fifty dollars or imprisoned not exceeding thirty days. They shall elect a registered physician, not a member of the sanitary committee, to serve two years, with the title of county superintendent of health, and shall fix his compensation. The duty of the county superintendent of health shall be to carry out, as far as possible, such work as may be directed by the county sanitary committee and the State Board of Health. shall always promptly advise the Secretary of the State Board of Health of the unusual prevalence of disease in his county, especially of typhoid fever, small-pox and cholera. He shall make the medico-legal post-mortem examinations for coroners' inquests, attend the immates of the home for the aged and infirm and the prisoners in the jail or convict camp of his county, and make examinations of lunatics for commitment. He shall be the sanitary inspector of the home and jail, including convict camps of his county, making monthly reports to the county commissioners and to the Secretary of the State Board of Health."

Sec. 4. That section 8 be stricken out and the following substituted therefor: "The meeting of the State Board of Health for the election of officers shall be on the second day of the annual meeting of the Medical Society of the State of North Carolina in 1901, and every six years thereafter; and of the county sanitary committee for the election of a

county superintendent of health on the first Monday in May, 1901, and every two years thereafter."

Sec. 5. That section 14 be amended by inserting after the word "commissioners" in line five the words "or county sanitary committee."

Sec. 6. That section 15 be amended by inserting between the words "town" and "near," at the end of line two, the words "or the sanitary committee of a county"; by striking out after the word "town" in line fourteen, the words "or county board of health," and inserting in lieu thereof the words "board of health or county sanitary committee"; and by striking out after the word "town" in line twenty-one, the words "or county board of health," and inserting in lieu thereof the words "board of health or county sanitary committee."

Sec. 7. That section 23 be amended by striking out all of said section from the beginning of line ten and inserting in lieu thereof the following: "The sanitary committee of any county may make such regulations and provisions for the vaccination of its inhabitants and impose such penalties as they may deem necessary to protect the public health; and any person violating such regulations shall be guilty of a misdemeanor, and may be fined not exceeding fifty dollars or imprisoned not exceeding thirty days."

Sec. 8. That section 25 be amended by adding thereto the following: "And any person violating such regulations shall be guilty of a misdemeanor, and may be fined not exceeding fifty dollars or imprisoned not exceeding thirty days."

Sec. 9. That section 7 having been repealed, the number of 8 be changed to 7, and all subsequent sections in accordance therewith.

Sec. 10. That this act shall be in force from and after its ratification.

It will be seen that, stated in a few words, to quote from the editorial comments thereon in *The Bulletin* for February, these amendments "consist essentially: In increasing the term of members of the State Board of Health from two years, all expiring at the same time, to six years, so arranged as to expire at different times, thereby assuring a continuing board; in the creation of a 'county sanitary committee,' composed of the board of county commissioners and two physicians and endowed with definite responsibilities and powers, and in restoring the term of office of county superintendent of health from one to two years. Our law has always been defective in not providing proper machinery for its administration by counties. That defect is now remedied as satisfac-

torily, we think, as the conditions obtaining in our State will permit. It will also be noted that the medical profession is recognized as far as practicable, and this we hope will revive their interest in sanitary matters. It is true that the control remains in the hands of the board of county commissioners, as they will always be in a majority, but in all matters pertaining to the public health, including the election of a county superintendent of health, two physicians will have a voice."

It also appears that the State Medical Society must at this meeting elect two members to serve for six years, and two for four years, with the following members appointed by His Excellency, Governor Aycock, viz.: Drs. W. P. Ivey and Richard H. Lewis for six years, Drs. George G. Thomas and Francis Duffy for four years, and Mr. J. L. Ludlow, C. E., for two years.

In order that there might be no miscarriage in the organization of the county sanitary committees, I addressed a letter on March 2d to every board of county commissioners calling their attention to the amended laws, at the same time mailing them a copy, and again on March 28th I wrote to the chairman of every board and to the mayor of every county town, reminding them of the duty imposed upon them of each appointing a physician to serve as a member of the county sanitary committee. Although I specially requested that I should be notified of the appointments, and enclosed a postal card for reply, there are still a number of counties and towns to be heard from, and it is therefore impossible to say how many county sanitary committees have been properly organized.

The first fruits of this creation of practically a county board of health was shown in a request from the committee of Guilford county to your Secretary to visit Greensboro and advise with them as to the probable cause of much malarial fever just north of the city in recent years, and the best means of removing it; and in a similar request from the committee

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of the county of Durham to go to Durham and advise with them as to the best management of the small-pox which had gained a foothold in the county. I complied with both requests.

#### SMALL-POX.

The history of small-pox in the State during the past year is practically a repetition of that for the preceding two years, although the number of cases is nearly one thousand less, being 1,945 against 2,806 for the year 1899-1900, of whom 530 were white and 1,415 colored—a somewhat larger proportion of whites than heretofore. The death rate has also been lower, 2.83 per cent. for the whites against 4.78 per cent., and 1.63 per cent. for the colored against 1.44 per cent.; total 1.95 per cent. against 2.31 per cent. This decrease is probably due to the vaccination of a considerable proportion of the people through the influence of previous scares, for otherwise a reasonable expectation was that there would be more cases instead of fewer. This explanation is rendered more probable by the fact that this last year the disease has prevailed chiefly in the country districts where vaccination has not been practiced as it has been in the cities and towns, centres of population and trade.

Some time since I received from a friend a copy of a poster illustrated with pictures of cases of small-pox, and containing the announcement "Vaccine Sold Here," which he had picked up in Tennessee, and which was accompanied by a letter suggesting that they might be useful in this State. It revived a suggestion I made to the Board several years ago to placard the State with the simple rules of health, and immediately appealed to me, so I wrote the Mulford Company asking if they could furnish me with similar posters signed by the Board, and at what price. In response they kindly sent me several thousand in the form desired without charge. I have distributed them in a number of counties where small-pox was

prevailing, and they seem to have been of service. The man who would "rather have small-pox than be vaccinated" stops talking after seeing the pictures. The small-pox inspectors, whose reports are attached, have continued to be of much service, Governor Aycock having given his consent to their employment, as required by the section of the law making a special appropriation for use when rendered necessary by pestilential disease. In tabulated form the small-pox statement is as follows:

#### TABULATED STATEMENT.

COUNTIES.	NUMBER OF CASES.			NUMBER OF DEATHS.		
	White.	Colored.	Total.	White.	Colored.	Total.
Alamance		3	3			
Alexander		2	2			
Buncombe	13	22	35			
Burke	44	15	59			
Cabarrus	3	25	28		1	1
Caswell	56	110	166	5	1	6
Chatham	7	6	13	••••••		•••••
CherokeeCleveland	1 2	1 38	2 40		1	1
Craven	3	28	31	1		3
Cumberland	32	74	106	1	2	9
Currituck	02	7	7		1	1
Davidson	8	50	58			
Davie	1	9	10			
Durham	12	90	102			
Edgecombe		17	17			
Forsyth	2	73	75		2	2
Franklin		50	50			
Gaston	40	8	48			
Gates		17	17			
Granville	26	8	34			
Greene	52	140	192			
Guilford	14	16	30		·	
Halifax	2	22				
Harnett	12	15				
Henderson	4	1	5			
Hertford		1	-			
redell	5				••••••	
Johnston	7	8			•••••	
enoir		1		•••••	•••••	• • • • • • • • • • • • • • • • • • • •
incoln	2	00	2		2	3
Mecklenburg Moore	30	88 18	118 18	1	1	1
Nash	16	58	74	2	2	4
New Hanover	10	8	9	2	2	4
Orange	9	32	41			
Pamlico		30	30			
Pasquotank		10	10		2	2
Person	11	29	40		ĩ	1
Pitt		7	7			
Polk	9		9			
Randolph	2	8	10			
Richmond		1	1			
		52	52		2	2
Rockingham	35	108	143	2	2	4
Rutherford				1		1
Stanly	6	15	21		,	
ransylvania						
Vance	3	2	5			
Wake	10	71	81	1	1	2
Watauga	10		10	•••••	•	
Wayne		4	4			•••••
Wilkes		17	17			
Wilson						2
Yancey	40		2	4		2
Total (in 54 counties)	530	1,415	1,945	15	23	36
Death-rate, per cent		1,410		2.83	1.63	1.95

\*Number of cases not reported; deaths only. The county of Wilson has been omitted from the above table for the reason that the figures could not be obtained from the County Superintendent of Health, because, in his opinion, there had been no small-pox. In his reply to my letter asking for his report on small-pox for the year he writes:

"Our discussion to day before our County Society was the countried income the character of the country in discuss the character of the country in the countried in the country in the countried in

In his reply to my letter asking for his report on small-pox for the year he writes: "Our discussion to-day before our County Society was the eruptive disease that has prevailed in this county for the past three months, and it was the unanimous opinion that it is not small-pox. I suppose there have been 500 cases in the town and county and only one death, and that in an old man who was sick with la grippe nine days before he broke out."

he broke out."
On the other hand the small-pox inspector for that section of the State, who was sent to the county at the request of a member of State Board of Health living there, says the disease was small-pox (see report of Dr. Tayloe, infra), and two of the leading physicians of the county in a letter to the inspector dated May 11, 1901, say: "We believe there has been small-pox in the county in the practice of other physicians, and we know there are cases of small-pox we have seen."
The above is a simple statement of the facts in the possession of the Secretary, and the candid reader can draw his own conclusions, relying in doing so on the good character and sincerity of all the parties to the controversy.

#### REPORT OF THE SMALL-POX INSPECTORS.

REPORT OF SMALL-POX INSPECTOR L. HARRILL, M. D.

STATESVILLE, N. C., May 15, 1901.

Dr. R. H. Lewis, Secretary State Board of Health, Raleigh, N. C.

SIR:—I send the following report of visits made as small-pox inspector during last year:

June 13, 1900.—Went to Lincolnton and examined a suspected case, but did not find small-pox.

December 13.—Went to Taylorsville, found one case in discrete form, a negro.

January 6, 1901.—Went to King's Mountain, where I saw two cases, both white men.

February 3.-Went to Gastonia and found three cases, all whites.

February 5.—Went to Triangle, Lincoln county, and saw one case, a white man.

February 9.—Went to Shelby and saw one case, a young white man. Other cases were reported in the county among negroes, but I did not see them.

March 2 to 5.—Went to Burnsville, but did not see a single new case. Many cases had recovered. Two deaths in Yancey county.

March 6.—Went to Durham, where I saw one case, a white man in town, and three other white men at the hospital. Also eleven cases, all negroes, at the hospital. Other cases were reported in the county at that time, but I did not see them.

Respectfully submitted,

L. HARRILL, M. D.,

Inspector.

REPORT OF SMALL-POX INSPECTOR JOSHUA TAYLOE, M. D.

WASHINGTON, N. C., May 10, 1901.

DR. R. H. LEWIS, Secretary State Board of Health, Raleigh, N. C.

SIR:—I submit herewith to the State Board of Health the following report of my work as small-pox inspector, from May 1, 1900, to May 7, 1901. In this report I give the towns, counties, number of cases examined, how managed and by whom, also what precaution had been taken up to the time of my inspection.

January 9 and 10.—1 visited Fayetteville and Manchester, this being my first inspection for this year. I examined sixteen cases, thirteen colored, three white. One white suffered from the confluent form of the disease. These cases were managed by Dr. McGougan, Superintendent of Health. Some precautions had been taken.

February 8 and 9.—I visited some points in Robeson county, and examined five cases of the mild type of the disease, which were under the care of Superintendent of Health, Dr. Pope, necessary precautions having been taken.

February 10.—I inspected the condition in Greene County. I examined twelve colored, two whites. Many other cases existed that I did not examine. This county was sadly neglected, and no precautions had been taken until after my inspection. Drs. Grimsley and Green took charge of this much neglected section.

February 10.—I made an inspection in Wilson county, examining one case shown me by the Superintendent of Health, which was a well marked case of variola. I examined nine other cases shown me by a local physician equally as well marked. All these were colored. I was informed that the disease then existed among many whites, which I did not have the opportunity to see. In the house of the one case shown me by the Superintendent of Health the patient informed me that she had just lost her son with the same disease; in another house, pointed out to me by a local physician, in which I found six members constituting the family, all suffered from the disease except one, who had been successfully and recently vaccinated. Very slight precautions had been taken.

February 14.—Near Weldon, in Halifax county, I made an inspection of one case, white, confluent in character and quite an ill patient-Saw three colored cases which had about recovered from the disease. To say these cases were in the care of Dr. Green, Superintendent of Health, is a sufficient warrant that they were well managed and all precautions taken.

February 19.—I examined some suspects at Ayden, Pitt county, and finding they did not have variola they were dismissed.

March 5.—At Farmville, Pitt county, I examined six cases, all negroes, suffering from a discrete form of small-pox. These cases were under the care of Dr. Laughinghouse, Superintendent of Health, and well managed.

April 18.—At Benson I examined seven cases, five white and two colored. Of these one white and one colored suffered from the confluent type; others were the mild form of the disease, well cared for by Dr. G. E. Parker.

April 19.—I visited Dunn and Four Oaks and advised with the proper authorities relative to effective quarantine on account of the disease being near by. Also urged thorough vaccination.

May 7.—I made inspection at Smithfield. Examined one case, colored; had confluent small-pox; was well managed by Dr. Wharton, Superintendent of Health.

At many points I visited in the State I did not examine all the cases, but only a sufficient number to satisfy myself and local authorities.

Small-pox has existed during this epidemic in all its varieties, from the mild, modified and seemingly insignificant type to the confluent form with all its horrors. In each town or county where I made inspections I would submit to the town and county commissioners and local health board my report, giving therein diagnosis and advising as to the best possible means of stamping out and controlling the disease. Also described the full technique for caring for patients and handling suspects, suggesting as thorough vaccination as possible in every section which I visited.

We are free to admit that a large majority of the cases seen in the present epidemic are of the mild type of the disease, yet that is no evidence that the eruptive fever is not genuine variola, as the same type of disease is now and has been prevalent in a great many of our States for the past two or three years.

This eruptive fever that is now prevalent seems to answer to every description of small-pox as described by the best authors. Its clinical history, progress and infection, along with the typical eruption, excludes a reasonable probability of any other disease.

The fact that this epidemic has been characterized by extreme mildness has, in some instances, led to uncertainty in the minds of a few physicians who had seen but a case or two without a knowledge of the condition elsewhere, or else who failed to correctly observe or interpret the true nature of the case with which he dealt.

Again, in a few other cases, physicians have denied the existence of variola from, to say the least, rather questionable motives. In fact, we have knowledge of more than one case in which written reports denying the existence of the disease in certain localities have been signed by physicians who are known never previously to have seen a case of variola, nor ever to have visited one of the cases the nature of which they were discussing. Comment in such cases is, of course, unnecessary.

Joshua Tayloe, Small-pox Inspector.

The Secretary called attention to the fact that there was a difference of opinion between the County Superintendent of Health on the one hand and the State Small-pox Inspector and a resident member of the State Board of Health on the other as to the nature of an eruptive disease prevalent in Wilson county, the former claiming that it was not small-pox, and the latter that it was, and asked for the views of the session as to how it should be reported.

Dr. W. S. Anderson: The case that occurred in town I watched closely from the time I was called until the patient The eruption came out about the second day, the fever continued until the fourth or fifth day. The cruption came out in consecutive crops and not a single one of these eruptions went to suppuration, and hence no secondary fever. I have never seen a case of small-pox where the vesicles did not suppurate and the patient have a secondary fever. You cannot find an author, young or old, but that says it has an incipient course to run, that at about the eighth or ninth day the pustules erupt and produce secondary fever. I have studied the cases of my county since January and have not seen a single case where a single vesicle suppurated. In all good conscience I did not feel like pronouncing it small-pox when I The gentleman sent for the expert, and posknew it was not. sibly before he saw the case said he knew it was small-pox, and when I took him to the place the pustules were still hard, and he said: "Oh! yes, it is small-pox." I said "Doctor, I do not believe there is an expert under heaven who can tell it until it has time to develop and the fever develops." I wrote Dr. Lewis if there was any symptom whereby small-pox could be diagnosed other than secondary fever, I wanted to know it. One of the town physicians took this expert into the country five miles without consulting me at all. The expert told me there were six or seven cases of small-pox there, one typical one. He said she had secondary fever. I went there at once, put my thermometer in her mouth, and her temperature was 99.5. I went back next morning and her temperature was normal, and that was the ninth day. There are a number of cases in our town that all the doctors call chicken-pox, and that is one reason why it is so hard to quarantine. The doctors who complained the most would treat negroes for smallpox and white people for chicken-pox. I would quarantine the negro. A good many people would go about there on the streets working, broken out.

As for its being small-pox, we have had all those cases and only one death, and that was an old man who had a chill and was sick nine days before the cruption. The chairman of the Sanitary Board came over to consult with myself and I asked the chairman of the Board of County Commissioners to get all the doctors together and let's discuss the matter, and I believe with unanimous consent, one doctor not giving his full consent to the action, we agreed that the thing to do was to let the matter go. Mr. Chairman, it is the right of every man in this hall to know how to diagnose small-pox, and he can do it.

Dr. H. W. Lewis: This question of diagnosis illustrates the fact that doctors will disagree. In Portsmouth, Va., the same question arose. There is where North Carolina got the small-pox, though they claim they got it from us. Whenever they have had small-pox the question exists. I would like to ask the doctor if these eruptions appeared in people who had been successfully vaccinated.

Dr. Anderson: Yes, sir.

Dr. Lewis: Then I would ask him how did he know they were successfully vaccinated. Vaccination is one of the most deceptive things we have to contend with. People with sore arms, and even scars, have been shown not only to be susceptible to small-pox but to re-vaccination time and again. The vaccination to be thorough must exhibit the constitutional symptoms.

Dr. Anderson: Two years ago we vaccinated about 1,500 people in our town. One of my boys did not take well, and I vaccinated him again when this scare came. It took well this time. Both my boys had this cruption, and just before I left home an old negro woman told me she had nursed small-pox in the war and had had this cruption on her. In the case of this woman who had the case which the expert pronounced genuine small-pox, I thought I had a test case there. Her two children had been vaccinated, her baby had not been. One of

the children and the unvaccinated child took it at the same time. I never could get but one of the doctors to go but one time to see that case. On the eighth or ninth day the eruptions were nearly dry. The unvaccinated child had slight spasms.

Dr. H. W. Lewis: I do not deny the existence of chickenpox in the town of Wilson. Vaccinated people are frequently not vaccinated. Last year a convict was discharged from the penitentiary farm, having been previously vaccinated. went to Norfolk and returned to North Carolina with a case of small-pox. Upon that man's arm were two large scars inflicted by vaccination he had received at the State farm. He had a very severe case of small-pox. He got well but came out thoroughly pitted, his face honey-combed. A certain proportion of cases will have variola. They sent in Norfolk and Portsmouth for Marine Hospital experts, and this disease, without a dissenting voice, was pronounced small-pox. It was as mild as the epidemic which has been described in Wil-When a man is thrown in contact with eruptions such as severe cases of chicken-pox there is but one thing to do-quarantine the town. The more fuss you make the better. deaths are necessary to make people rush to vaccination for protection.

Dr. Fletcher: For some time after we had some cases in our county I labored under the same delusion under which Dr. Anderson is laboring. I expected something more severe and formidable. From those mild cases we had there developed confluent cases of small-pox. I was forced to change my diagnosis.

Dr. Anderson: I think we must rely on some authority as to what these things are. Every physician at Wilson who saw the epidemic here said it was not small-pox, the laymen said they did not think it was small-pox. They told me that this man, five miles in the country, had confluent small-pox; it never became confluent at all. When the pustules fail to run

together it is discrete. There has not been a confluent case in my county. The difference in New York small-pox and mine is that they die 20 to 25 per cent. in New York, and in mine only one case.

Dr. R. H. Lewis: That is not the kind of small-pox that we have in North Carolina and over the United States. In Ohio, Michigan and elsewhere the death rate is about 1 per cent. The epidemic that we have had in this country for the last three or four years has been very irregular, but it is undoubtedly small-pox. If the disease occurred in an adult the presumption was that it was small-pox.

Dr. Booth: May not the Board of Health recommend that this eareless mode of treating small-pox be discontinued? Let us get up a recommendation and try to stop this loose acting in our State. I am by the expert like I am by the Board of Censors, men who are competent to know have put him there. When he says a man has small-pox I am going to accept it as small-pox.

Dr. S. W. Battle: I think it will be conceded that we have in this country a disease closely resembling small-pox, and if it is small-pox it is a mild form. I believe Dr. Anderson is thoroughly conscientious, but I move that we get at the sentiment of this body as to whether it is reasonable to think that Wilson county would be immune from this disease that prevails over this State and the United States.

Dr. R. H. Lewis: I think the proper thing to do will be to put a foot-note at the bottom of the tabulated statement. Print Dr. Anderson's letter to me and print the opinion of the expert.

Dr. S. W. Battle: I will say I do not think that all discrete cases of small-pox have secondary fever. I think Osler says so.

Dr. Anderson: I think he does not, sir.

Dr. Archie: Some time in the early part of the year I found a man sitting on my door-steps and I invited him in.

He told me he had been to Lynchburg, Va., for two or three weeks, but there was no small-pox there. I told him to go immediately home and not leave the house. He had a genuine case of discrete small-pox; father, mother, seven or eight brothers and sisters had it. Other cases, mild in type, were developed. There was no case that could have been mistaken for anything else than small-pox. He had secondary fever. We had Dr. Henry Long from Statesville, the small-pox expert. Dr. Anderson is, in my opinion, mistaken. I vaccinated the First North Carolina Regiment three times. I have seen the worst sort of arms, sores nearly to the bone, and yet the vaccination had not taken.

Dr. Macon: I would like to know if this disease which is spreading in North Carolina is not small-pox, what is it? It is a disagreeable disease, and if it is not small-pox I think the people of the community should be quarantined anyhow. They may be used to scratching in the eastern part of North Carolina from the mosquitoes, but we people in our high, healthy mountains do not love to be scratching so much.

What is the opinion of the expert worth if it is not to be regarded? If he proclaims small-pox, what are you going to do about it? If there is no law behind him backing him, take him out of the field and save the expense, and if there is a law let him enforce it.

It is the business man that objects to small-pox; he pats the doctor on the shoulder and says you will ruin our town. Take a stand promptly against these business people and they will be the first to come over and help you out. All discrete forms of small-pox do not have secondary fever. This disease should be exterminated from North Carolina, and it can be done.

Dr. Anderson: I want to say I had fourteen to sixteen placards of "Small-pox" nailed up all over the town for three months. I wrote the Secretary I did not think it was small-pox, but was doing it because the expert said so.

There are some people who are not much susceptible; have to be vaccinated several times before it will take. I reported that fact to the sanitary committee and they reported the fact to the State Board of Health, and he wrote to them saying that we had it in our hands to manage that—but we have not.

Dr. R. H. Lewis: You can, if you want to.

Dr. Booth: The fine points about the diagnosis of smallpox are sometimes very pretty to talk about and very tiresome to listen to. There is an eruptive disease in North Carolina that whoever has it does not want to have it again. Vaccination prevents it; it has been proven that vaccination prevents it. I have very likely seen more small-pox than any man in North Carolina. I saw 7,000 cases in 1864-'65. We have a much milder form of small-pox here than we had there in 1865. Still the characteristic symptoms are the same. We all know from the days of Jenner until now, if vaccination had been properly resorted to small-pox would have been exterminated from the earth. There is a spirit of carelessness now existing among the doctors that is deplorable. I wanted to make a report to the County Commissioners in my county about the various counties in North Carolina and Virginia, and wrote to the different counties to get the statistics. From Durham I got the reply: "When the disease made its appearance we established a pest-house and a house of detention. We had to establish another house of detention, as the negroes exposed themselves in order to get fed."

We adopted this plan: When a man became a suspect we vaccinated him and kept our eye on him.

The great point the authors strain over is the last point. There is not an author I can find anywhere that says they have a secondary fever.

Dr. Herking: All this small-pox that we have had here the last few years was largely caught from negroes. Everybody knows that this disease we have been discussing and disturbing ourselves so much about has not been so terribly fatal as small-pox used to be. It may be because it comes from the negroes. All you gentlemen know that to catch syphilis from a negro woman does not hurt you as bad as to catch it from a white woman.

Dr. Battle: I think the doctor has raised a very interesting point in regard to the racial origin of the disease. There is no doubt but that the disease in this country is largely here from the returning soldiers from Cuba and Porto Rico. The soldiers have gone to their homes and scattered it all over the country. It may be that this disease is mild because it was mild in Porto Rico and Cuba.

Dr. Archie: All the soldiers of Cuba were thoroughly vaccinated before going to Cuba, again in Cuba and again on their return.

Dr. H. W. Lewis: The classical symptoms of a great number of these cases are absent, nevertheless the consensus of opinion of men calculated to judge, men who have been trained, particularly Marine Hospital experts, is that the disease is small-pox. Their opinion must be regarded, and we must of course look to some authority outside medical books.

The discussion was then closed and the following members were elected to serve on the Board of Health:

Dr. S. Westray Battle of Asheville, six years.

Dr. H. W. Lewis of Jackson, six years.

Dr. W. H. Whitehead of Rocky Mount, four years.

Dr. John L. Nicholson of Richlands, four years.

Dr. R. H. Lewis: The Surgeon-General of the United States Army has sent out a letter making inquiries as to leprosy. If any of the gentlemen come in contact with any discase which suggests leprosy he will help them in making the diagnosis. So far as I know, there is no leprosy in this State.

The conjoint session then adjourned.

# MINUTES OF THE ANNUAL MEETING OF THE STATE BOARD OF HEALTH AT WRIGHTS-VILLE, JUNE 11, 1902.

The annual meeting of the Board was held at Wrightsville on June 11th, Drs. Thomas, Ivey, Duffy, Whitehead, Nicholson and R. H. Lewis being present.

The rules and regulations for the transportation of the dead, as amended by the Conference of State and Provincial Boards of Health of North America at its meeting at Niagara Falls in September, 1901, were adopted, and the Secretary was ordered to have the same printed for distribution to the transportation companies and to the embalmers and undertakers of the State.

The short term of Dr. R. H. Lewis as a member of the State Board of Embalming having expired, he was re-elected for the full term, as the law requires.

Committees of two were appointed to complete the inspection of the public institutions of the State.

 $\Lambda$  general inspection of all the public water supplies of the State by the Engineer of the Board was ordered.

The Secretary of the committee appointed to revise the Instructions for Quarantine and Disinfection submitted their report, which was approved and adopted.

Tuberculosis was discussed and suggestions made with a view to a more active fight against that dread disease.

The Treasurer submitted his report, which was audited and found correct.

#### CONJOINT SESSION

#### WITH THE

#### STATE MEDICAL SOCIETY AT WRIGHTSVILLE,

JUNE 12, 1902.

The conjoint session with the State Medical Society was called to order, President Thomas of the Board of Health in the chair.

Dr. Lewis stated that Dr. Tait Butler, the State Veterinarian, was present by invitation, and moved that he be offered the privilege of the floor. Motion carried.

President Thomas, on assuming the chair, said:

I feel on account of the lateness of the hour it is hardly proper that I should take from the time that belongs to the State Society in its present pressed condition for time by any extended address.

The President of the State Society has recommended that some steps be taken by the Society at large looking to the apprehension, if I may so name it, of the illegal practitioners in North Carolina. The laws as they stand now are sufficient, providing they were effectually carried out. The duty of bringing these illegal practitioners to the notice of the grand juries stands with the solicitors. For reasons sufficient to themselves, I regret to say not always good ones, these men are not presented to grand juries, and all over this broad land of ours, in many countries, there are one or more men who are practicing without the color of law.

Many of us interested in the best welfare of the medical profession in North Carolina have seriously thought of means to prevent this misdemeanor, as the law denominates it, and no good plan up to this time has presented itself.

Your President, the President of the State Society, has in his address brought this thing to your notice, and anticipating the report which the committee is to bring in on the address of the President, I wish to say that the State Board of Health realizes that its functions involve everything that looks to the well-being of the citizens of North Caro-

lina, and among its duties is the protection of the health and lives of the citizens from the dangers attendant upon ill-prepared men who are posing as physicians and surgeons, that is, men who have not legally been licensed to make a living in accordance with the law. Therefore, the Sceretary of the State Board of Health now stands ready (there are only a few of you here—and I wish you to take this and spread it among the other members of the Society) to have presented to him the name of any illegal practitioner in North Carolina, that is to say, any man in North Carolina claiming himself a physician who has not the license of the law, provided that when that name is sent in to him you send with it competent testimony of his illegally practicing and such other evidence as may be necessary to his conviction. The Secretary of the State Board of Health will then present that to the solicitor of the district in which that man practices.

One of the great objections to the Society of the State undertaking the correction of these evils has been, that wherever a doctor or an aggregation of doctors appeared as witnesses or as prosecutors in the mildest sense against any illegal practitioner, immediately the defendant set up the cry of persecution and jealousy-and all of the work fell to the ground, because juries seldom convicted as long as the physicians made the prosecution. The State Board is out of that, they are part of the State's police, are regularly commissioned by the State to care for the welfare of its citizens, and I believe it is well within their duties to undertake this work. With his usual generous, earnest endeavor to do what is best for all matters pertaining to the State Board of Health, the Secretary offers to take up this arduous labor. It lies then with you, the practitioners in North Carolina, wherever you know a man is illegally practicing, to secure his accurate name and residence, his post-office address, and the evidence that he is practicing, and if necessary a certificate from the clerk that he is not registered in the county in which he is practicing, send this to the Secretary of the State Board of Health and he will take charge of it and as far as possible push the ease to a determination and have this man brought before the law. I think that is the best plan I know of which has been presented for the correction of this evil.

In matters more accurately pertaining to the State Board of Health and its work, I wish to suggest for another year that the health officers of each county should make a more eareful examination as to the causes of the spread of typhoid fever. The investigations of the commissioners sent out by the Government to look into the outbreak of typhoid fever in the camps of the United States troops, especially at Chicamauga, seem to have demonstrated that the infection was carried more by flies than through drinking water—so it comes about that an ample opportunity is now offered to any active superintendent of health

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in his county to begin to study the question of drinking water and flies as sources of infection. I would suggest that each superintendent of health shall keep a close record of the cases occurring in his county, beginning from this meeting, and mark the first case that occurs in his county as No. 1, locating it on a map, and then tracing carefully to the next case if it is in the immediate neighborhood, near enough for the infection to have been carried by flies, or by bacteriological examination determine if it has come through the water supply. This will prove to him that the doctor in charge of that case has or has not been doing his duty to the family of the infected person or to the neighbors of the infected lot by having the discharges of the patient properly and effectually disinfected. If it is too far away, see what communication there has been between the houses, and, if any, note all happenings to visitors and the communication between the houses. In that way, it seems to me, a good deal could be learned.

Early in undetermined cases of fever located in one neighborhood, when the diarrhea appears before the actual fever is declared, it may be well to urge the physicians to report this for the study of the case by the Superintendent of Health. The plan seems to me to be an easy one, and in Wilmington it has worked very well. We last year took a map of the town, and marking a case when this method was begun by the Board of Health, No. 1, and the next case No. 2, and so on, so that by the numbers on the tags we can trace up the fever as it occurs. Certain it is that deaths from typhoid fever ought to be lowered and the disease ought to be more carefully looked after.

The delegate from the Tuberculosis Congress this year will no doubt give you some useful information concerning tuberculosis—this dreaded "great white plague."

# ANNUAL REPORT OF THE SECRETARY OF THE NORTH CAROLINA BOARD OF HEALTH, 1901—1902.

The work of the Board during the past year has been chiefly routine in character, but none the less useful on that account we hope. Since the more important items have been previously published in the *Bulletin*, which is mailed every month to every physician in the State, and since a full report, in detail, for the years 1901-1902 will be made to the next

Legislature, which meets early in January, 1903, it is unnecessary and inadvisable to take up the limited time at our disposal by a report of that character on this occasion. I will, therefore, confine myself to a statement, in a general way, of the more important work. This is mainly included under sewerage investigations, inspections of some of the State's institutions, bacteriological work, the organization of the State Board of Embalming and efforts to control small-pox.

#### SEWERAGE.

At the request of the City Board of Health of Wilmington an investigation of the method of sewering that city, proposed by the Wilmington Sewer Company, was made by Colonel Shaffer, the engineer of the Board at that time, and recommendations made by the committee appointed by the President of the Board. The result was a modification of the plans in accordance with the suggestions made.

In compliance with an act of the Legislature, referring the settling of a controversy between the municipal authorities of Blowing Rock and the two leading hotels of that summer resort, a committee of the Board investigated and settled the matter.

### INSPECTION OF STATE INSTITUTIONS.

The State Hospital and the School for the Deaf and Dumb, at Morganton, were inspected and found in excellent condition. By request of the proprietors an inspection of the private sanatorium, known as Broadoaks, more especially its water supply, was also made. The other State institutions will receive their usual biennial inspection before the meeting of the next General Assembly.

As stated in my last report, at Durham, the State Board of Agriculture, at its meeting in December, 1900, at our request, agreed to have certain bacteriological work done for

the Board in its laboratory. At first this was limited to examinations of suspected drinking waters, but was later extended so as to include specimens from diphtheria cases, blood in doubtful eases of fever, and sputum. ous action on the part of the Board of Agriculture, I am sorry to say, has not been appreciated, or at least availed of, by the profession, as was hoped and expected. According to the report of the Biologist of the Department, Mr. McCarthy, the total number of biological analyses made in the past six months was 141-35 pathological, mostly of sputum, 48 of drinking water and 58 of milk—a total of 83, or an average of only 14 a month. When we consider the fact that there are about 1,500 physicians in the State it will be seen that less than one per cent. take advantage of the valuable privilege offered. The Board of Agriculture can hardly be expected to do this work for us indefinitely, and the time will come when we must appeal to the Legislature for an appro-The way to obtain this is to show conclupriation for it. sively the value and importance to the people of the work, and the extent to which the laboratory is patronized would be an index of the opinion of the medical profession as to its value. It is to be hoped, therefore, that our physicians will avail themselves more freely of these opportunities. It is interesting to note that only one sample of milk was found infeeted with the tubercle bacillus, and further investigation showed that to have been accidental.

## BOARD OF EMBALMING.

The General Assembly of 1901 passed an act creating the State Board of Embalming, consisting of five (5) members—three from the State Board of Health and two practical embalmers, all to be elected by the Board of Health. At the last annual meeting, in compliance with the act, Drs. Battle, Duffy and R. H. Lewis, of the Board, and Messrs. J. M.

Harry and H. W. Simpson, practical embalmers, were elected. The Board of Embalming thus created, organized on July 5, 1901, by electing Mr. J. M. Harry of Charlotte, President, and Mr. H. W. Simpson of New Bern, Secretary and Treas-Since that time three meetings have been held for examination of applicants for license to practice embalming, and sixty-three licenses have been granted. This action put us abreast, on this line, of the most progressive and advanced boards of health of the country. The importance of having this work, in cases of infectious diseases, done by one competent, not only to embalm, but to properly disinfect the room and its effects, is self-evident. In order to impress upon the undertakers of the State the importance of thorough disinfection, and to set forth clearly for their benefit the best methods, I read a paper entitled "The Embalmer in His Relation to Infections Diseases" at the annual meeting last month of the State Funeral Directors and Embalmers' Association, which seemed to be appreciated, and which, I hope, will be productive of good. It was printed in the Bulletin for May, as you may have seen.

## SMALL-POX.

As was anticipated and predicted, small-pox has continued to prevail in the State. Owing to the fact that no small-pox was reported from Wilson county from May 1, 1901, to January 1, 1902, the Superintendent of Health, considering the eruptive disease widely prevalent in the county to be chicken-pox, it is impossible to give an accurate statement for the whole State. Omitting Wilson county for the present, and confining ourselves to the other ninety-six counties, the totals are as follows: Number of counties infected (including Wilson), 55; number of cases (excluding Wilson), whites 618, colored 1,197—total 1,814; number of deaths, whites 21, or 3.40 per cent.; colored 27, or 2.25 per cent.—

total 48, or 2.64 per cent. The figures for the preceding year are: Cases, white 530; colored 1,415—total 1,945; deaths, white 15, or 2.83 per cent.; colored 23, or 1.63 per cent.—total 36, or 1.95 per cent. From this it appears that the death-rate during the past year has been slightly higher than the year before, but not so high as the year preceding that, when it was 4.78 for the whites, 1.44 for the colored.

The chief difficulty in the management of the disease has been the same as heretofore—mistaken diagnosis as chicken-This was the trouble in Wilson county, the authorities not admitting it to be small-pox until an expert from the Marine Hospital Service, kindly sent at our request by Surgeon-General Wyman early in January, declared it to be unquestionably small-pox; and representatives from contiguous counties at a meeting held at Rocky Mount on the 14th of January threatened to quarantine against Wilson unless the precautions proper against small-pox were immediately taken by that county. From that time the disease was reported to me regularly as small-pox, the total number of cases, not classified as to color, being 333, with 6 deaths from January 1st to May 1st. Prior to this period the Chairman of the County Sanitary Committee of Wilson told me, in a personal interview, that in his opinion there had been, up to the time of our conversation, 1,500 cases. So it is safe to say that, including the 333 cases reported after January 1st, there were during the past small-pox year between 1,500 and 2,000 cases in that one county. Adding this to the 1,817 cases reported from the rest of the State would make between 3,000 and 3,500 eases, the largest number ever occurring in the State in the same length of time.

Three counties, Camden, Pamlico and Tyrrell, failed to comply with the law requiring the election of a Superintendent of Health. An outbreak of small-pox in Camden county last month, however, demonstrated the utter helplessness of the authorities to control the disease, and this fact, strongly

re-inforced by the excellent work of Inspector Tayloe, brought about a prompt election of a Superintendent by the County Sanitary Committee. So that now there are only two counties in the State that are without that important official. We hope to secure action in these counties before we meet again.

The two Small-pox Inspectors, Drs. Tayloe and Harrill, have rendered good service, though their services, owing to previous experience with the disease on the part of the local authorities, have been less in demand than heretofore. A tabulated statement by counties of small-pox in the State from May 1, 1901, to May 1, 1902, is appended.

While nothing especially brilliant has been accomplished during the past year, the work of the Board, I think we can claim, is more appreciated than ever before.

# SMALL-POX IN NORTH CAROLINA—MAY 1, 1901, TO MAY 1, 1902.

COUNTIES.	NUMBER OF CASES.			NUMBER OF DEATHS.		
	White.	Colored.	Total.	White.	Colored.	Total
				,		
Alamance		8	8			
Beaufort			ĭ	1		
Buncombe	1	98	99	1	2	
ouncombe	1				2	
Burke	3		3			
Cabarrus		83	117	1		
laldwell		3	3			
arteret	1		1			
aswell		7	7		1 1	
atawba		i	1			
herokee		4	64			
	2		8			
Cleveland		6				
umberland	1	35	36	•		
Davie		5	5			
Ouplin		45	45		2	
Ourham	15	20	35			
dgecombe	6	ĭ	7			
orsyth		75	101			
ranklin	20					
ганкип		4	4			
Saston	75	25	100	1		
raham	9		9			
ranville		4	4			
reene	6	25	31		2	
uilford	11	14	25	1		
Ialifax		1	1			
lantax						
Iarnett	9	16	25	1		
laywood	4	4	8			•••••
Ienderson	32	41				
redell	6	27	33			
ohnston	13	7	20			
enoir	4		4			
incoln	10		10			
IcDowell	3	5	8			
Iadison		9				
	10					
lartin	11		11			
Iecklenburg	73	300	373	2	3	
lash	27	16	43	2		
lew Hanover		ĭ	1			
range	22	5	27			
erson	9	40	49			
E1 9011						
olk	4	7	11			
andolph	1	26	27			
ichmond	1	5	6			
ockingham	11	36	47		1	
owan	25	30	55	2		
utherford	25	12	37			
ampson	35	10	45			
ampson						
tanly	7	40	47			••••••
tokes	2	3				
urry						
wain	3		3			
nion	ĭ	17	18			
Vake	4	21	25		1	
Vayne	15	60	75	1		
ayne	19	00				
Wilson						
adkin		6	6			
m-4-16		1				
Total (in 55 counties)			1,814	21	27	4
Death-rate, per cent				3.40	2.25	2.0

<sup>\*</sup>Report incomplete, and not included in totals in this table.

#### REPORT OF SMALL-POX INSPECTORS.

REPORT OF DR. JOSHUA TAYLOE.

Washington, N. C., May 17, 1902.

Dr. R. H. Lewis,

Secretary State Board of Health, Raleigh, N. C.

Sir:—I submit herewith to the State Board of Health the following report of my work as Small-pox Inspector, from May 1, 1901, to May 17, 1902. In this report I give the towns, counties, number of cases examined, how managed and by whom, also what precaution had been taken up to the time of my inspection:

May 18th, 19th and 20th.—I visited Goldsboro, examined one case of varoloid in a colored person. This case was in charge of Dr. W. H. Cobb, Jr., and was well cared for.

January 16, 1902.—I visited Clinton, N. C., examined several eases, all white, two confluent. There were several exposures at the time of my visit to Clinton who afterwards developed small-pox. This outbreak was fortunately in charge of Dr. R. E. Lee, who managed it very skilfully.

April 10.—I examined one ease in Beaufort county of confluent form, the patient lived only a few days. The outbreak in this county was skilfully managed by Dr. John G. Blount. His efforts in stamping out and preventing a further spread of the disease were both skilful and highly satisfactory.

May 16.—Made an inspection in Camden county. I examined three cases of a discrete form of the disease, one death recorded at the time of my visit there. There was absolutely no management, as the county was without a Superintendent of Health. I succeeded in having the Commissioners appoint a health officer, who soon got things under control. Dr. Lister took charge of the condition of this county.

At many points I visited in the State I did not examine all the cases, but only a sufficient number to satisfy myself and local authorities.

Small-pox has existed during this epidemie in all its varieties, from the mild, modified and seemingly insignificant type to the confluent form, with all its horrors. In each town or county where I made inspections I would submit to the Town and County Commissioners and local Health Board my report, giving therein diagnosis and advising as to the best possible means of stamping out and controlling the disease. Also, described the full technique for caring for patients and handling suspects, suggesting as thorough vaccination as possible in every section which I visited.

We are free to admit that a large majority of eases seen in the present epidemic are of the mild type of the disease, yet that is no

evidence that the eruptive fever is not genuine variola, as the same type of the disease is now and has been prevalent in a great many of our States for the past two or three years.

This cruptive fever that is now prevalent seems to answer to every description of small-pox, as described by the best authors. Its clinical history, progress and infection, along with the typical cruption, excludes a reasonable probability of any other disease.

The fact that this epidemic has been characterized by extreme mildness has, in some instances, led to uncertainty in the minds of a few physicians who had seen but a case or two, without a knowledge of the condition elsewhere, or else who failed to correctly observe or interpret the true nature of the case with which he dealt.

Again, in a few other cases physicians have denied the existence of variola from, to say the least, rather questionable motives. In fact, we have knowledge of more than one case in which written reports, denying the existence of the disease in certain localities, have been signed by physicians who are known never previously to have seen a case of variola, nor ever to have visited one of the cases the nature of which they were discussing. Comments in such cases are, of course, unnecessary.

Joshua Tayloe, M. D., Small-pox Inspector.

REPORT OF DR. L. HARRILL.

STATESVILLE, N. C., January 1, 1903.

Dr. R. H. Lewis, Scerctary State Board of Health, Raleigh, N. C.

SIR:—I send you the following report of visits made as Small-pox Inspector since my report to the annual meeting of the Board of Health in June. 1902.

March 2 to 5, 1901.—Visited Burnsville, Yancey county, but did not see a single new case. Many cases had recovered, and some of the patients carried unmistakable signs of small-pox. There had been two deaths from the disease previous to my visit. I met with the County Commissioners for consultation and advice.

March 6.—Visited Durham, where I inspected one case discrete small-pox in town, a white man, and three other white men at a hospital owned by the county. Also eleven cases, all negroes, at the hospital. Two or three cases were confluent in form, the balance were discrete in form.

July 15.—Visited Hendersonville and examined about fifteen cases of small-pox, several of them mild, but four or five eases were of confluent form. Other cases were reported in different parts of the county, but I did not see them. No decided quarantine regulations had been established, and the disease was gradually spreading through the community.

January 15, 1902.—I visited Madison and examined one typical case of discrete small-pox at about the tenth day of the cruption. Dr. Sam Ellington, Superintendent of Health of Rockingham county, had recognized this case as small-pox, but the family physician insisted that it was chicken-pox, and 1 left him still persisting in that opinion.

February 4.—Visited Lincolnton and examined one well defined case of discrete small-pox in a white man, the superintendent of a department in a cotton mill.

April 19.—I went to Yadkinville, and about twelve or fifteen miles in the country I found three cases small-pox.

September 1.—I visited Wadesboro, and six miles out of town examined a white man forty to fifty years old with a well defined case of chicken-pox, with the cruption about four days old and drying rapidly.

September 8.—Visited Kernersville, Forsyth county. At this place small-pox had been called herpes, and previous to my visit there had been at least twenty to thirty mild cases.—I examined several cases and found all to be small-pox.

October 31 and November 1.—Visited Oxford and examined one case that was found to be chicken-pox. This made the fourth case of well developed and typical chicken-pox the writer has seen during the year among grown-up people, three of them being men over thirty years old.

November 10.—I visited Bryson City and examined a woman who had just returned from a visit to friends on Hazel creek in Swain county. The eruption had not made its appearance, but her physician reported to me on the 12th that she had a well marked case of small-pox.

November 11 and 12.—I visited Robbinsville, Graham county, and twelve miles in the country, in the direction of Hazel creek in Swain county, I saw a family of five persons. Three of them had small-pox, the others had not been attacked. The citizens of a large section of the two counties, adjoining territory, covering ten to twenty miles square, had been afflicted with small-pox for several months. This was all caused by the escape of one man from quarantine at Ducktown nearly one year ago. Number of cases estimated at from seventy-five to one hundred.

November 29.—At the request of citizens of Marion I visited that place and saw six cases of small-pox, three of them in negroes convalescent. The other cases, two of them white men and one negro, all typical cases.

December 9.—I visited Lincolnton, where I found three cases small-pox then and several others convalescent. These cases were at two whiskey distilleries in the county, and I found many visitors around the premises.

At all of these places I have urged the people to be vaccinated, and at every place there was established rigid quarantine regulations. The only hope of stamping out the disease is by vaccination. It should be made compulsory, and no child should be permitted to enter the public schools except upon the certificate of some reputable physician saying he had been successfully vaccinated.

Respectfully submitted,

L. Harrill, Inspector.

Report approved and adopted.

Dr. Lewis: I think perhaps, Mr. President, it would be well to pass a resolution requesting an appropriation on the part of the Legislature for the bacteriological work. It may be of some help when the Legislature meets. I think we will have to get an appropriation from the Legislature. The Board of Agriculture has been very kind and has done a great deal of good, and is disposed to do more, but there are a great many claims upon it, and I think it is our duty to get money from the Legislature for this purpose if we can, and a resolution on the part of the Conjoint Session of the Board of Health and of the Medical Society would at least have more or less weight with the Legislature to secure the appropriation of a sufficient sum to continue the bacteriological examinations now being made.

Dr. Walton offered the following resolution:

Resolved, That it is the opinion of this Conjoint Session of the Board of Health and Medical Society of North Carolina that the best interests of the State will be served by the appropriation by the General Assembly of a sum of money sufficient to conduct the bacteriological work now being done by the Department of Agriculture in Raleigh for the Board of Health.

Carried.

Dr. Lewis: I would like to call your attention to this bacteriological work. You will realize the fact that these privileges have not been appreciated by the profession as they should have been when I state that only 141 examinations were made during the past six months—35 pathological, blood and sputum, and 48 of suspected drinking water at the request of physicians, the remaining 58 being of the milk of

public dairies instituted by the Board of Health. I am particularly anxious that the demand upon the laboratory shall be heavier for the next six months. The way to get money from the Legislature is the way to get it from any other set If you go to a man and demonstrate the of sensible men. worthiness of the object you have in view and prove it is a reasonable and proper thing, if he has the money to spare and a liberal spirit, he will give you the money. He will not give the money unless he is satisfied that it is a worthy object and can be carried out. The Legislature is the same way. If you prove to the Legislature that this work is of importance and value to the people, and show a demand for it on the part of the people by reference to the work actually done, and call their attention to the fact that on account of this work doubtless many lives have been saved and much sickness of the people prevented, you will stand some chance of getting the money.

I would like to call the attention of the Conjoint Session to the lamentable want of appreciation on the part of the health officers of the State of these privileges. I don't flatter myself you read the Bulletin, although it is sent to you every month, but if you do you have seen therein that on several occasions I have offered to deposit with the Superintendent of Health or the medical health officer of any city or town suitable containers or carriers, so that if a physician has a case of urgent character, which ought to be decided very promptly, he will not have the delay of having to write to Raleigh for a permit to get a bottle. Sixteen have finally been persuaded I felt it would be the proper thing to ask to ask for them. the Board to buy these things, so the Board of Health has -bought 500 of them, and more of them are still on hand and ready for distribution upon request. I went so far as to say if one single physician in a county would make a request for the deposit in his county of these carriers that I would send them to the Superintendent of Health, but notwithstanding

that I only got up to sixteen. I repeat the offer. If you wish to have these things at hand and will make a request of me officially, I will see to it that the deposit is made with the Superintendent of Health. We do not deposit bottles for drinking water, nor carriers for sputum, for the reason that there is no hurry whatever in sputum, and in the case of water, while it is desirable to have it done as soon as possible, the danger of the abuse of that privilege is so great—so many people want the water examined from mere curiosity—and as we have only one bacteriologist we don't want to overwork him entirely, we restrict it in that way.

Dr. Tait Butler, the State Veterinarian, who was present by invitation, was introduced to the session and made the following remarks on bovine tuberculosis:

Mr. President and Gentlemen:—I don't know that I have any special message to bring to this meeting, but there was one point touched upon in the report of your Secretary that ought possibly to be more fully explained. It stated that out of fifty-nine samples of milk examined during the year by the bacteriologist of the Board only one contained tuberele bacilli. My object in referring to this matter is to call attention to the fact that this is in no sense a true index of the prevalence of tuberculosis in the dairy herds of the State. Only a very small percentage of even tuberculous cows give milk in which the bacillus of tuberculosis is present. On the other hand, I have examined several dairy herds in the State, and out of 175 head nearly forty per cent. have reacted to the tuberculin test. I would not have you take this, either, as a true index of the prevalence of the disease, for these were undoubtedly exceptions; still, it shows that the dairy herds of the State are not free from the disease, and the question is one that may well command the attention of this meeting. The disease is, no doubt, rare among the cattle of the general farmer, and while this condition exists is the most opportune time to deal with the danger.

Of course, since Koch sought to reverse himself, and the opinion of the medical profession generally, on the basis of nineteen incomplete and defective negative experiments, it seems to have been popular to question even the possibility of conveying tuberculosis to the human consumer of milk and flesh, but it seems to me the question raised by the noted bacteriologist is being rapidly settled against him. Only recently Behring, who stands as high in the medical world as Koch, has stated in the advanced sheets of a book which he is publishing that he has

positively produced fatal tuberculosis in bovines with the human bacillus. Moreover, we did not need Koch to tell us that it was difficult to produce tuberculosis of a progressive or fatal type in cattle with the germ of human tuberculosis, for Smith of Harvard, Dinwiddie of Arkansas and others had demonstrated the fact several years before. They also demonstrated another fact which should not be lost sight of, namely, that the bovine germ is more virulent to a large number of the lower animals, and by inference possibly to the human as well.

In short, it is not necessary for us to go to Germany to obtain a knowledge of the relations of human and bovine tuberculosis. We know as much about that question as the Germans or any other people, and while the personal interests of some and the desire of all is to credit the statement of Koch, the facts are against his dogma, and we should as medical men seek to avoid the dangers of indifference which are likely to follow such an utterance from such an authoritative source.

On the other hand, there is also good reason to avoid the opposite extreme to which many veterinarians and physicians of human medicine have gone, and while we should teach that the danger to the human from the consumption of tuberculous milk and flesh is slight, we must not forget that such a danger does exist, and that there is an urgent necessity for manufacturing a correct public opinion on the subject.

It is the duty of this Board, as stated by your President, to protect the health of the people of the State, and it seems to me that probably the State Board of Health and the Department of Agriculture might find some plan for co-operative work in dealing with this question. The larger public dairies should have such supervision as will prevent the sale of milk from tuberculous eows, or eause it to be sufficiently heated to kill the tubercle bacilli, which is about 160 F, for ten minutes. This, while sufficient to kill the bacilli and spores, if they form such, is not sufficient to give even a cooked flavor to the milk. However, the disposition of the animals which react to the tuberculin test is the difficult part of the problem. It is an easy matter to determine the presence of the disease. I say this advisedly, for while I would not agree to find ten per cent, of the cases of tuberculosis in a herd by a physical examination, by the tuberculin test I can find practically all of them. Not only is tuberculin the most marvelously accurate diagnostic agent known to the veterinarian, but some day you practitioners of human medicine will learn a lesson from us and use it extensively for the early diagnosis of tuberculosis in your patients.

But, as stated, the difficult problem demanding solution is the disposition of the tuberculous animals determined by the tuberculin test. Can this meeting offer a solution that is practicable?

Dr. Lewis: I would like to express my appreciation of the excellent remarks of Dr. Butler, and to say for his informa-

tion, and also to the Conjoint Session, that the control of public milk supplies comes within the jurisdiction of the local authorities, and those authorities have been advised to take action. The best plan would be to have the law amended so as to require the State Veterinarian to pass upon all of the dairy cattle in the State.

Dr. Butler: Mr. President, I would like to explain that while the Department of Agriculture will for the present make tuberculin tests of dairy herds on request of the owners or local health boards, still that is perhaps not desirable unless those animals that react to the test are properly controlled. To cause these animals to be scattered over the State because of the fact that they had reacted to the test would do more harm than not to make the test at all.

What we need is for you gentlemen to manufacture a correct public sentiment that will enable the authorities to deal with these animals in a scientific and sensible way. Those animals that are only slightly affected should not be sacrificed completely. Their flesh is fit for food, although at present no large number of persons in the State would buy it if they knew it. What we want is that you educate the people to a correct and reasonable view of the subject, and then, when such public sentiment has been manufactured, it will be possible to deal with the question.

In the Government inspection of meats, in the large slaughter-houses of the country, those animals not extensively diseased and those in which the disease has not become generalized are passed for food. When two separate and distinct organs are diseased it is considered to indicate a tendency towards generalization, and the carcass is condemned. But with our conditions, where the reacting animals must go on the local market, it is impossible to dispose of them in that way, and this difficulty will require time and a diffusion of correct knowledge among the people for its solution.

· Dr. . . . . : I would like to ask the Secretary of the State

Board of Health what action the city authorities could take in regard to cattle that are in the country!

Dr. Lewis: It is altogether with the City Boards of Health. They should require all persons selling milk to obtain a license only on one condition: that the herds should be tested and kept pure.

I feel sure, gentlemen, that you have all realized that our State has been fortunate in securing Dr. Butler as our State Veterinarian. He will be a valuable help to us in the work we have to do.

Adjournment.

# SANITARY INSPECTION OF STATE INSTITUTIONS.

#### PUBLIC BUILDINGS.

CAPITOL, SUPREME COURT AND AGRICULTURAL BUILDINGS.

TO THE COUNCIL OF STATE.

GENTLEMEN:—The undersigned, a committee from the Board of Health, inspected the Capitol Building and the buildings occupied by the Agricultural Department and the Supreme Court.

The only suggestion with regard to the Capitol that occurred to us was that more effective ventilation of the Senate Chamber and the House of Representatives could be secured by keeping fires in the open fire-places during the sessions of the Legislature. The chimneys would be thereby converted into ventilating shafts for these rooms, and the drafts provided by the presence of the fires would overcome the complaints of dampness and mustiness, if not entirely, in a very great measure. This seems to be the only feasible scheme for the betterment of these two large rooms, unless the whole system of heating and ventilating is changed, which would involve the expenditure of a large sum of money.

The buildings of the Agricultural Department and the Supreme Court are both in good condition. We would suggest, however, that the water-closets in the Supreme Court be provided with ventilation and light, which could be done by windows opening out into the rear of the building.

Respectfully submitted,

G. G. THOMAS, M. D., W. H. WHITEHEAD, M. D.,

## EDUCATIONAL INSTITUTIONS.

#### THE STATE UNIVERSITY.

BOARD OF TRUSTEES,

University of North Carolina.

GENTLEMEN:—The undersigned, representing the State Board of Health, having made a sanitary inspection of the University, respectfully begs leave to report:

With the exception of one water-closet in the Carr Building and one or two in the "battery" of closets under the Library, which did not flush as freely as they ought, I found nothing to criticise from the health point of view.

I was glad to see that the suggestion made in a former report that a pump with tight cover be substituted for the bucket and chain in the open well used for drinking purposes, had been carried out. While an innovation which does violence to the sentiment which has clung to the old well for a century, it is clearly in the interest of health.

The University is to be congratulated upon the completion of its water-works and upon the source of supply-Bolling's creek, with its wooded and sparsely settled water-shed. The eareful monthly inspection of the water-shed and the analyses, both chemical and biological, made in your laboratories several times during the session, leave little to be desired in your water supply. Still, in rainy weather the water sometimes becomes too muddy to filter satisfactorily, and as a remedy for that defect and at the same time an almost absolute guarantee against infection are both within easy reach, I would recommend its adoption as soon as practicable. I refer to the utilization of the beautiful, clear stream coming down a rocky ravine from several bold springs in the Iron Mine hill. A small dam for impounding it, I was informed by Prof. Gore, could be advantageously located within about 500 feet of the pumping station. The whole cost of making this change, including the purchase of a small amount of land to render the little water-shed practically unassailable, would not exceed a thousand dollars, and would probably be less. I was gratified to learn that a danger which threatened the water supply in the shape of certain claims as to water rights of a mill below the intake had been averted, the very day of my visit, by the acceptance on the part of the mill owner of a proposition from the University. When the spring water, which can be supplemented by the present supply whenever it may be rendered necessary by a larger demand, is utilized, the water problem will be finally and most satisfactorily settled.

I was very much pleased with the new heating plant, which has been installed since our last inspection. The heating of all the buildings of the University in every part by a forced current of hot water from one central plant, at which point the amount of heat can be regulated to suit the weather, combined with the fact that proper ventilation is supplied by the open fire-places in the old buildings and by the ventilating flues which have been provided in the new buildings, and especially when combined with the fact that in practice it "works" satisfactorily, justifies the statement that it is effective, economical and sanitary.

Respectfully,

RICHARD H. LEWIS, M. D., For the Board of Health.

STATE NORMAL AND INDUSTRIAL COLLEGE, AT GREENSBORO.

BOARD OF TRUSTEES,

State Normal and Industrial College.

Gentlemen:—Acting for the State Board of Health, under section 3 of the law governing the same, 1 made on the 15th inst. a sanitary inspection of your institution, and respectfully beg leave to report my observations and recommendations as follows:

I found the general conditions, viewed from the sanitary stand-point, to be excellent. I was pleased to learn from President Melver that the suggestion made in a former report from this Board, that double beds be abandoned and only single ones be used, had been followed. Also that Peabody Park had been gratly improved, especially in the matter of roads and walks, thus providing on the College grounds, together with tennis and basket-ball courts, ample facilities for the outdoor exercise so necessary to the health of the young, particularly those subjected to the confinement of student life. These should be supplemented by a thoroughly equipped modern gymnasium, in which special exercises under a competent instructor may be given, in order to strengthen the weak points and fully round out the physical woman, at the same time impressing upon many future teachers and mothers the fundamental principles of right living as it relates to the body. It is easy to see what an influence for promoting the cause of health in the State they would become.

Remembering the condition of affairs when I made a special investigation to ascertain the cause of the very serious epidemic of typhoid fever in 1899, I learned with much gratification that not a single case of typhoid had occurred among the students resident in the College since that time. As you will recollect, the cause of that outbreak was found in the infected central well, the water of which was used by all the girls at their meals. The abandonment of wells and the installation of apparatus for sterilizing all drinking water has apparently borne good fruit in this clean record as regards the most serious of all the diseases of adolescence. An unfortunate but instructive contrast to this is afforded in the occurrence this fall of five cases of typhoid among eight of the students boarding in the city and getting their drinking water from the same well. Such experiences will doubtless be repeated from time to time as long as present conditions obtain, and it constitutes another strong reason why you should have more dormitory room. The propriety and advisability, from the health as well as every other point of view, of your having the young women committed to your charge entirely under your care and supervision are so manifest that it would be superfluous to argue the question.

The present water supply, I was informed, is unsatisfactory, both as to quality and service, and I cordially endorse the suggestion of at

least investigating the feasibility of getting your own supply from a system of gang-wells. I am a thorough believer in the advisability of every public institution of any size having its own independent water supply whenever practicable.

I noted the fact that you were still without a cold-storage plant. Its consideration as a matter of domestic economy and convenience does not come within the scope of a report of this character, but leaving that aspect of the subject aside, it is of importance as a conservator of health. In our comparatively warm climate the development in milk and meats of what are known as ptomaines, poisons resulting from the growth of certain bacteria of decomposition, is a menace to health that should be guarded against. The occurrence last year of a large number of cases of poisoning from this cause in an institution in our State similar to yours points the moral.

To recapitulate, in conclusion I would say that the immediate sanitary needs of the College are: Sufficient dormitory room, a thoroughly equipped gymnasium, a better water supply and cold-storage plant.

Respectfully,

RICHARD H. LEWIS, M. D..
For the Board of Health.

COLLEGE OF AGRICULTURE AND MECHANIC ARTS, RALEIGH.

THE BOARD OF TRUSTEES.

A. & M. College, Raleigh.

Gentlemen:—In obedience to the instructions of the State Board of Health, in accordance with the provisions of section 3 of the act relating to the Board of Health, the undersigned have made a sanitary inspection of the institution under your charge, and respectfully beg leave to report:

We found the general sanitary conditions to be very good, but in one most important particular very defective. We refer to the lack of a sewerage system, and the use in lieu thereof of surface privies. Since the demonstration of the conveyance of typhoid fever by flies, which after crawling over the dejecta fly into the kitchen or dining-room and with their feet infect the food, all surface privies are liable to become at any time a menace to health. This is especially true where the young are segregated together, for typhoid fever is essentially a discase of adolescence. From the sanitary point of view this is, in our judgment, the crying need of the College, and a complete sewerage system should be supplied as soon as possible.

In some of the rooms there are, we think, too many inmates. Overcrowding slowly saps the vitality and makes its subjects more susceptible to disease and less able to withstand its ravages when once attacked. This danger is greater in the dormitories heated by steam than in those with open fire-places, for the reason that the ventilation in the former is not so good and the air is not changed so frequently. We feel it to be our duty to caution you against this danger, especially in view of the large number of applications for admission.

Respectfully yours,

(Signed)

GEO. GILLETT THOMAS, M. D., RICHARD H. LEWIS, M. D.,

Committee.

AGRICULTURAL AND MECHANICAL COLLEGE FOR THE COLORED RACE, AT GREENSBORO.

THE BOARD OF TRUSTEES.

A. & M. College for the Colored Race, at Greensboro.

GENTLEMEN:—Representing the State Board of Health, in compliance with section 3 of the act relating to the Board of Health, I made on the 15th inst. a sanitary inspection of the institution under your care, and respectfully beg leave to report:

The general sanitary conditions were good. I was particularly pleased with the location and general surroundings of the well from which the drinking water supply is chiefly obtained. While, as a rule, well-waters are more apt to become contaminated than public supplies, it is difficult to see how this well, located as it is with drainage away from it in every direction, can become infected, unless from the surface privy now in use or from some future sewer that may be placed too near it and laid with imperfect joints. This danger should be borne in mind in any work on this line hereafter.

I beg to eall your attention to two matters which I think deserve attention, namely, the surface privy and the lack of ventilation in the dormitories.

1. The surface privy.—Surface privies are always, to a greater or less extent, according to their location and the care taken of them, a menace to health. This is especially true where numbers of young people who are peculiarly liable to typhoid fever are gathered together. I would therefore recommend that you make a connection as soon as practicable with the city sewerage system and abandon the privy. If this for any good reason be not feasible, I would advise the adoption of the water-tight tub and dry-earth system in place of the present plan of defecating directly upon the ground. Although the danger of contaminating the well is extremely remote, there is a possibility of it under the present arrangement. This possibility would be removed by the adoption of the tub system, while at the same time the students would be given an object lesson in the proper care of such privies as they will

nearly all use in after life. An abundant supply of dry earth and a scoop should always be kept in the house, and every evacuation be immediately and completely covered with the dust.

2. Lack of ventilation in the dormitories.-The building, it appears, was constructed with a view to heating by steam or hot water, but no provision was made for ventilation. The installation now of a complete ventilating system would be troublesome and expensive, but the present conditions could be greatly improved at a very small cost, in this way: Put in a transom, hinged at the bottom, over every door, raise the lower sash of at least one window in each room and place thereunder a plank six inches wide cut to fit. By this arrangement fresh air from outside would enter between the panes with an upward rush, thereby preventing direct draughts, and the general air of the room would find its way out through the transom. Or an opening might be made through the outside wall opposite a radiator so that the fresh air would be somewhat warmed. Or, still better, direct-indirect radiators might be substituted for those now in use. I trust that in the construction of the proposed new dormitory the question of ventilation will receive the consideration its importance deserves. The negro race since emancipation has developed a peculiar susceptibility to consumption, the death-rate among them from tuberculosis, as compared with the whites, being about three to one. Nothing is more effective in increasing this susceptibility than impure air, and proper ventilation, therefore, is specially indicated for the colored people.

Respectfully,

RICHARD H. LEWIS, M. D., For the Board of Health.

INSTITUTION FOR THE DEAF, DUMB AND THE BLIND AT RALEIGH.

To the Honorable the Board of Directors, North Carolina Institution for the Deaf, Dumb and the Blind at Raleigh.

GENTLEMEN:—The undersigned, a committee from the Board of Health, visited the institution for white and colored children under your care, and were given every facility by Mr. Ray for inspecting the buildings.

In the asylum for white children the additions that have been necessarily made to the original building have made it a difficult matter for the Superintendent to maintain the health standard, but judging from his reports he has succeeded admirably in protecting the inmates of the house under his care, and he has kept his little charges in excellent condition. The plumbing was in fairly good shape, and the ventilation was probably made very effective by the rather loose fitting doors and

windows. There is one great need in the institution, however, that we feel called upon to suggest, that is the prompt provision somewhere in the building of rooms approaching the size and construction of the ward for the sick ones, and two or more rooms for isolation of children sick with infectious diseases, as scarlet fever, diphtheria, and so forth. The inmates of this institution every summer are dispersed widely over the State and mingle freely with the people in their respective neighborhoods. They are exposed to the diseases prevalent in these communities or settlements, and it must be accounted a fortunate eireumstance that so far these little ones have not brought back to the institution from their homes one or more diseases which would seriously impair the best interests of the asylum. It is hardly safe, however, to hope for a continuance of this happy condition, and it seems that an early provision for the care of such of the inmates as may be stricken down with a serious sickness is certainly called for. It is needless to say that if a case of infectious disease should appear there should be ample provision for isolation of the sick of such character as would insure the safety of the other inmates. The rooms now used for sick wards are very imperfectly fitted for the purpose. We respectfully submit that these rooms be enlarged by taking in the passages going each way from the head of the stair-case. The closets should be included in the rooms. The walls should be replastered and covered with a water-proof finish, so that they can be washed; if necessary, without marring them. The ceiling of iron should be removed and replaced by a smooth surface ceiling covered by the same water-proof material as the side walls. No more wood-work should show than is necessary, and if practicable all the corners of the walls, ceilings and wood-work should be rounded. The rooms on the front of the same floor might be made into isolation chambers for infectious diseases; the same rules being followed regarding the walls, ceiling and wood-work. It would be wise, if the size would admit of it, to have each one of them provided with a vestibule, which would allow the nurse in charge of a sick inmate to have an ante-chamber in which to deposit the clothing, discharges and dishes from a sick room, the outer door of this ante-chamber closing tightly on the passage, and the ante-chamber itself be cared for by some one especially charged with the work.

We wish to commend the cleanly condition in which we found the buildings and premises.

The institution for colored children was in generally good condition, and needs only the same provision as that suggested for the asylum for the white children.

Respectfully submitted,

W. H. WHITEHEAD, M. D., G. G. THOMAS, M. D., Committee. SCHOOL FOR THE DEAF AND DUMB, AT MORGANTON.

THE BOARD OF DIRECTORS,

School for the Deaf and Dumb, Morganton.

Gentlemen:—Having made a sanitary inspection of your institution, we are pleased to report that we find everything coming within our jurisdiction in good condition. From what we have seen we have reason to believe that the health interests of the afflicted children committed to your care are well looked after by your Superintendent and attending physician.

Respectfully yours,

GEO. GILLETT THOMAS, M. D., RICHARD H. LEWIS, M. D.,

Committee.

#### OXFORD ORPHAN ASYLUM.

The Board of Directors,

Oxford Orphan Asylum.

The undersigned visited the white and colored Orphan Asylum in Oxford as a committee from the Board of Health. It gives me great pleasure to say that everything about the Asylum was clean, comfortable and in a generally excellent condition under the wise superintendence of Colonel Hicks and his employees. They were extremely anxious that I should see all the property under their control. It behooves me, however, to say, that at the time of my visit the water supply of the institution was taken largely from a certain number of springs in the hillside to the west of the buildings. These springs, it seemed to me. were by no means protected against probable infection from the washings of this hillside. I understood that a certain part of the drinking water of this institution was, at the time of my visit, procured from an open well on the premises. There was certainly one case of typhoid fever in the hospital building and several more cases of fever not sufficiently definite at that time to be declared typhoid. While I am aware of the fact that these children are scattered during certain seasons of the year over many parts of the State, and that new ones are constantly coming in from widely separated communities, and that all of them run the risk of being affected during their absence from the Asylum and exhibiting it by falling down with fever after their return, at the same time the water supply is probably partly to blame for the condition that existed at the hospital. However, by this time, probably, this has been corrected, inasmuch as Colonel Hicks told me that within a short time all the water that was used by the institution would be drawn from a deep well, bored, as we understood, through impervious layers of elay and rock, which would preclude any danger of infection from surface water.

The little unfortunates who are here protected and eared for, as well as prepared for the struggle of life, seemed happy and contented, and were, generally speaking, hearty children. It was a source of pleasure to know that a charity of this sort existed in our State, and that the money expended for its maintenance was so wisely disbursed.

Geo. G. Thomas, M. D., For the Board of Health.

#### STATE HOSPITALS FOR THE INSANE.

CENTRAL HOSPITAL, AT RALEIGH.

The Board of Directors,

Central Hospital for the Insane.

Gentlemen:—The undersigned, a committee appointed by the State Board of Health to inspect your institution and "make a report as to its sanitary condition, with suggestions and recommendations to your honorable body in compliance with section 3 of the act relating to the Board of Health," respectfully beg leave to report:

It gives us pleasure to say that we found the institution generally in good sanitary condition-buildings and grounds clean and well kept, and the plumbing in a good state of efficiency. But in one particular, and that probably the most important from the sanitary point of view, to-wit, the water supply, in part at any rate, the state of affairs is bad. We refer to that portion of your supply which is taken from Rocky Branch. This small stream, as you are well aware, receives, a short distance above your intake, not only the drainage from two slaughter pens, but also that from the A. & M. College, including a certain amount of sewage, and sewage of the most dangerous character, as it comes from the hospital of the institution. Although the situation is greatly relieved by your excellent supply for drinking purposes derived from the bored wells, still the idea of using water so defiled, even for bathing purposes, especially for irresponsible persons who may at any time drink thereof, is abhorrent to one's sense of decency, as well as to sound sanitary principles. This condition of things, we take it, all interested are agreed must be remedied, and the practical question, therefore is, How?

While the suggestion to take water from the Wake Water Company meets with our approval (as somewhat modified below), when we consider it solely in relation to the health of the patients we feel that our duty as representatives of the State requires us to look at the matter from all the points of view of interest and importance to the State.

As we are informed, the cost to the Hospital of making a connection with the water company would be \$4,500 and the estimated minimum annual water rental from the company would be \$1,200. This sum capitalized at four per cent., the rate of interest paid by the State, would represent an investment of \$30,000, in addition to the \$4,500. This, it will be borne in mind, is based on the minimum estimate for the present population, which is sure to be increased in the near future.

Hospitals for the insane, more perhaps than any other institutions, require a water supply not only good in quality but superabundant in quantity when feasible. Too great economy in their use of water is to be deprecated, and when every gallon of water used has to be paid for, the disposition to save in this respect, in the generally economical management of the institution which is necessary, would be hard to resist. Experience on the part of individual householders shows that they rarely ever use water as freely by meter as they do by the flat rate. This, to our mind, is the sanitary objection to buying water, provided, of course, a larger supply of good water belonging entirely to the hospital can be obtained. Whether this can be satisfactorily accomplished through a system of gang-wells in an adjacent bottom, or by the installation of a small water-works plant with pump and filter on Rocky Branch, with intake above the Fair Grounds, above which point the water-shed is of much the same character as that of Walnut Creek, or by getting water from a source not yet suggested, is a question that should be answered by an expert sanitary engineer. Inasmuch as section 18 of the Health Law makes it obligatory upon the Board of Health to advise boards of directors or trustees of all State institutions in regard to water supplies and sewerage systems, and equally obligatory upon the latter not to take action in the premises until such advice is received, this report will be completed by a supplementary one from the Engineer of the Board, who has had a large experience in work of this character. We received every courtesy and assistance from the management. Respectfully,

GEO. GILLETT THOMAS, M. D., RICHARD H. LEWIS, M. D.,

Committee.

WINSTON-SALEM, N. C., December 3, 1902.

THE BOARD OF DIRECTORS,

Central Hospital for the Insane, Raleigh, N. C.

GENTLEMEN:—At the request of Dr. Lewis, Secretary State Board of Health, I visited the Central Hospital for the Insane on November 25th for the purpose of investigating and reporting on the most feasible and

practicable means of obtaining a pure water supply for the institution. As a result of my investigation I have the honor of submitting the following report:

The present water supply, at least that portion of it which is drawn from Rocky Branch, should be abandoned. The conditions surrounding this source of supply at the present point of intake are such that it cannot possibly be of sufficient purify to be safely introduced into the institution for any purpose whatever. Neither is there any point further up the branch where a sufficient quantity of water could be obtained where the quality of the water is not seriously impaired by the sewage and drainage from the public institutions and dwellings which occupy the water-shed, which is apparently in a direct line of development for occupancy by homes, industrial and other enterprises. The sources of pollution on this water-shed are so numerous and extensive as to render it a totally unfit water supply for the institution, even though it might be treated by the most modern practical means of purification.

I find that there are two sources from which a suitable water supply for the institution can be obtained, viz.: From the Wake Water Company, which supplies the city of Raleigh, and an independent works to be established by the institution with the south fork of Walnut Creek, which enters Walnut Creek a short distance above the intake of the Wake Water Company, as a source of supply. For the first plan I am advised that the proper connections can be made to the pipes of the Wake Water Company to deliver water to the institution at an estimated cost of \$4,500, and that the company will furnish water to the institution at the rate of eight cents per thousand gallons. Such a price for water is quite reasonable, and the quality of the water that will be furnished the institution, judging from the source of supply and the character of the filtration plant and the care with which it is operated by the water company, should be entirely satisfactory, and, in my judgment, of exceptional purity.

The other source of supply which appears to be available for development and operation by the institution, possesses all the elements essential to make it a very desirable and highly satisfactory source of supply. The development and installation of a water supply from this source should include a filtration plant, and the ownership of at least a portion of the water-shed would be desirable. This water-shed appears to have no bad exposure at present, and apparently no probability of such in the future. If the entire water-shed of this small stream could be owned by the institution and be allowed to grow up in timber, it would constitute an ideal source of water supply. The development of a water supply from this source would be somewhat more expensive than the connection to the Wake Water Company, but it would have the advantage of being owned and operated and safeguarded by the institution itself, which is manifestly a very desirable condition.

The relative economy of the two sources of supply is a proper matter for investigation before making a choice. The economic study should include a careful estimate of the cost of installing the independent water supply and the interest account on the cost, together with the cost of plant and the depreciation. This should be compared with the same functions that would attach to taking the water from the Wake Water Company. Such a study as this being beyond the province of the State Board of Health to advise upon, I have not entered into it for the purpose of this report.

Either of the two plans suggested above would secure to the institution a very desirable and satisfactory water supply for all purposes, and except for the consideration of the desirability of such an institution owning and operating its own water supply, and the apparent less liability of contamination that attaches to the south fork of Walnut Creek than to Walnut Creek itself, the choice between the two plans above outlined is purely a question of economics, involving the cost of installation and operation.

Very respectfully submitted,
(Signed) J. L. Ludlow,
Engineer Member N. C. State Board of Health.

EXECUTIVE COMMITTEE,

Central Hospital, Ralcigh, N. C.

GENTLEMEN:—In compliance with your request for an investigation by the Board of Health of the question of tuberculosis in your herd of cattle and advice in regard to the proper action on your part under the circumstances, the President of the Board appointed the undersigned to make the investigation.

By appointment with Superintendent McKee I visited the Hospital on the 26th instant. He first submitted to me the reports of the veterinarian who tested the cows and of the Biologist of the Department of Agriculture, who made a biological examination of specimens from two of the cows which had been killed. We then made a general inspection of the infected animals. Although they appeared to be healthy and in excellent condition, they are undoubtedly tuberculous according to the reports referred to, as they reacted to the tuberculin test, which is generally regarded as proof positive of the existence of tuberculosis; and the tubercle bacilli were demonstrated in the specimens from one of the two cows, so that it is unnecessary to discuss the question of their infection. That may be regarded as settled in the affirmative. The practical question now before us, therefore, is: What shall be done with the cows and their milk? This question has two sides to it, the eco-

nomic and the humanitarian and sanitary. We will consider it from both points of view.

- 1. The economic.—Some high authorities, notably Professor Koch of Berlin, according to his recent address to the British Tuberculosis Congress, and the eminent American Veterinarian, Dr. Edward Moore, the tuberculosis of cattle is not transmissible to man. This position is, however, strongly controverted, and the weight of authority is to-day against it. For myself, I have always doubted the transmission of the disease to the human through the milk of tuberculous cows whose udders were healthy. All are agreed, however, that milk, even if infected, can be made harmless by pasteurization, and the meat by thorough cooking, With these precautions, therefore, there would be no practical dauger in continuing the use of the infected herd, even if tuberculosis were certainly transmissible from them to the patients.
- 2. The humanitarian and sanitary.—Tuberculosis is the greatest enemy of mankind. No trouble or expense should be spared to prevent its spread. In those communities in which there has been the greatest advance in the practical application of sanitary science it is the rule to forbid the sale of tuberculous milk and meat and to order the killing of all cattle proved to be infected with the disease. As long as the weight of authority continues to favor this course that is undoubtedly sound practice. For years we have been striving to educate public opinion in the State up to an appreciation of the value and importance of preventive medicine. If the State should deliberately, solely for the purpose of saving a few hundred dollars, refuse to follow the approved course under such circumstances, the effect upon public opinion would be bad, and the cause of sanitation injured. Feeling on the subject would be accentuated by the fact that in this particular instance the State stands in loco parentis to the patients, the insane being entirely irresponsible, and to all intents and purposes children. This feeling would be more intense among the relatives and friends who in all confidence have committed their stricken loved ones to the fostering care of the State. Should cases of consumption develop among the patients, as they will surely do from time to time in spite of all precautions, many relatives would almost surely attribute them to the use of the milk from the tuberculous cows and feel aggrieved at the management. Few of us would deliberately set before our own children milk from a cow known to be tuberculous, whether it were pasteurized or not, and if that be true we cannot deny that there would be grounds for complaint if it should be served to the insane.

Since the publication of Koch's address, investigators the world over have set actively to work to settle the question of the transmissibility of bovine tuberculosis to man. In view of this fact it might be thought advisable to hold the infected cows until it is settled, but this cannot be done in a day, and before a certain conclusion, which after all might be unfavorable, will have been reached, the cows will consume in food more than enough to replace them with sound cattle.

Considering the subject in all its aspects I would respectfully recommend:

- 1. That all infected cattle be killed.
- 2. That the stable occupied by them be thoroughly disinfected by spraying with a 1-1000 solution of bichloride of mercury and whitewashing, and be used for other purposes.
- 3. That the uninfected cattle be moved to new quarters; that they be tested every two or three months with tuberculin, and that every animal reacting be promptly slaughtered.

Respectfully yours.

RICHARD H. LEWIS, M. D.

August 31, 1901.-

#### STATE HOSPITAL, AT MORGANTON.

THE BOARD OF DIRECTORS,

State Hospital, Morganton, N. C.

GENTLEMEN:—In compliance with a request from the Superintendent of the Hospital to investigate as soon as practicable a limited outbreak of typhoid fever in and near the institution in order, if possible, to check promptly what might grow into a serious epidemic of that disease, we anticipated somewhat our usual biennial inspection and visited the Hospital on July 22d, spending two days there.

## The Typhoid Fever.

We took up first the consideration of the fever problem. The facts we learned from the Superintendent and Assistant Physicians were: The first case occurred June 20th and the last began about July 15th. one week before our arrival. The total number of cases was six. Of this number two were patients, one male and one female, and one a nurse in the Hospital; and three, including the first case, were in a row of private residences on a ridge just beyond the public road running by the north-eastern side of the Hospital and about three hundred yards distant. As you are aware, these houses are not in any way connected with the Hospital. Of the three cases belonging to the institution, two, the male patient and the nurse, were exposed to outside influences, including drinking water possibly from the infected wells of the private houses referred to, especially one near the barn, while of the three on the ridge, one, a visitor from a neighboring town where the disease was very prevalent, we feel quite sure brought it with her. According to bacteriological examinations made a short time before our visit in the biological laboratory of the Department of Agriculture on application of Dr. Murphy through the Secretary of the State Board of Health, the main water supply of the Hospital from the mountain was pure, that from the bored or gang-wells contained bacteria, which, while innocent in themselves, showed contamination from the surface. As this demonstrated a connection between the surface and the water of these wells, and therefore a constant danger of infection with disease germs, this supply had, very wisely we think, been cut off before our arrival. All the wells on the ridge referred to were found to be infected with the colon bacilli, which means that they had been contaminated by the bowel discharges of man or animals. The management of the Hospital is, of course, not responsible for these wells. So much for the water supplies.

Previous to the thorough and elaborate study of typhoid fever in our army during the Spanish war by a commission of three distinguished experts in this line of work appointed by the Surgeon-General of the army, the generally accepted opinion in the medical profession was that the germs of typhoid fever were introduced into the system almost solely through the medium of drinking water. According to the report of the commission, however, another means of conveyance was the common house fly, which, picking up the germs on its feet by crawling over the bowel discharges in the pits, afterwards deposited them on the food in the kitchen and mess tents. A fly with white powder on his legs was seen soon after the liming of the pits in the act of crawling over the food. As the typhoid bacilli are present in myriads in the dejections of those affected with the disease, and are also present in the bowels of convalescents and often of persons who are immune to the disease themselves, this method of transmission at once appeals to our common sense. Having this in mind we inquired as to the surface privies, and learned that there were three on the grounds, a fourth having been burned by order of the Superintendent a few days before. These were necessary conveniences for the workmen and for the patients having outside liberty. If every user would immediately cover completely with dry earth or lime his excrement, such privies would, if not too near a well or spring, be practically free from danger; but as a matter of fact, it seems impossible to have this done even by those in entire possession of their faculties, and of course it could not be expected of the alienated. An inspection of these privies showed the one near the women's building and the one at the barn to be in good condition, but the one towards the road showed a failure on the part of the frequenters to use the dry earth, and while it was no worse than such places generally are, we suggested its abolition, and it was burned at once.

There was no reason to suspect the milk supply.

Inasmuch as two of the three Hospital cases were subject to outside influences, the problem, so far as the institution is concerned, relates

only to the female patient. How she contracted the disease is a question we admit our inability to answer. It may have been a fly from the surface privies, but we do not know. Typhoid fever is a disease which is constantly occurring throughout our whole country in a great many instances without any demonstrable cause, and in so large a population as that of the Hospital occasional cases may be expected from time to time. We feel sure, however, that there is no source of infection generally applicable to the patients.

## The General Inspection.

A rather more careful inspection than usual of the Hospital and premises revealed nothing except the surface privies already referred to that could be criticised from the sanitary point of view. We found everything, both inside and out, in an excellent condition. But we think it would be wise to abolish absolutely all surface privies on the grounds and to substitute water closets at suitable points.

There is one matter, however, that we beg to call to your attention. and that is the water supply. The source of the supply, Black Fox Creek, is simply ideal with its remote, heavily wooded, uninhabited water-shed in the mountains, and the quantity, according to the measurements of the stream made by the engineer, under ordinary conditions of rain-fall, is sufficient for the present population, but in a time of severe drought there would not be water enough even now. Owing to the demonstration of the contamination from the surface of the gang-wells, which have hitherto been used to supplement the mountain supply, it is no longer desirable to use that water, so that the supply is limited to Black Fox Creek. When the population is increased by 250, as it will be, we were informed, when the women's building is finished, there will not be water enough. As we have said in former reports, the greatest abundance of pure water, 200 gallons per patient, is a sine qua non in the proper administration of such institutions as yours. We would therefore urge upon you the importance of making additional provision in this respect as soon as practicable. We were pleased to learn from the Superintendent that your honorable board had already taken steps to utilize Long Creek, and particularly that you had purchased practically all its water-shed, for you must own it to insure it against contamination. We investigated this creek on our last visit and were greatly pleased with it, considering it, now that you own the water-shed, equally as good as Black Fox and more abundant. Drawing upon the two streams your institution will have a water supply which for both quality and quantity will be beyond criticism.

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In conclusion, we wish to express our appreciation of the full opportunities for investigation afforded and the courtesies extended by the management.

Very respectfully,

GEO. GILLETT THOMAS, M. D., RICHARD H. LEWIS, M. D.,

Committee.

July 19, 1901.

STATE HOSPITAL FOR THE COLORED INSANE, AT GOLDSBORO.

THE BOARD OF DIRECTORS,

State Hospital for the Colored Insanc, at Goldsboro.

Gentlemen:—We, the undersigned committee of the State Board of Health, have carefully inspected the Hospital at Goldsboro. The general condition of the institution is good and reflects credit upon the Superintendent and his subordinates. There are, however, some imperfections of the institution which are worthy of notice:

# Water Supply.

The main water supply for baths, etc., is received from a branch by gravitation into a reservoir, from which it is pumped into the building. It is not intended for drinking water, but insane persons have access to it. There is no filter for this water, which is not very clear ordinarily and is sometimes muddy, and always liable to contamination from the open branch and unprotected water-sheds. If this water was filtered it would supply a good drinking water, and would be better for all purposes.

The drinking water is obtained from a surface well said to be twenty feet deep. This well is very close to a horse stable on the same level, and between it and the main building is a low spot of surface which is likely to collect impurities in dangerous proximity. We are informed that the management has repeatedly had examinations, chemical and bacteriological, made of this water, and that it always proves to be of good quality. This may be from the fact of the thick surface clay and also from the gravel stratum at the intake, which extends from the river-bed near by. We deem it advisable to place a filter in position for the purification of the main supply referred to already.

## Sewerage.

In the sewerage system some of the closets are imperfect and are capable of containing fecal discharges left in reach of the insane, who may (and we are informed sometimes do) thrust their hands therein. It would be better if these were replaced by the *automatic flushing closets*, some of which are in the institution and are not objectionable on the grounds stated.

#### Tuberculosis.

Lastly, we call attention to the fact that tuberculous patients are not separated from the other inmates. The mortality of this institution from all causes is not high, but about thirty-five per cent. of recent deaths reported are from tuberculosis, besides a large per cent. of chronic bowel diseases, some of which were probably tuberculous. This disease is contagious, and as the insane subjects of it cannot be so controlled as to prevent expectoration against the walls and on the floors, they are even more dangerous than the sane. Some means should be devised to separate them from the non-infected. If a separate apartment cannot be provided, we recommend that one end of a ward be divided off so as to effect separation.

All of which is respectfully submitted.

Francis Duffy, M. D., J. L. Nicholson, M. D., Committee.

WILMINGTON, N. C., December 15, 1902.

Dr. R. H. Lewis, Sceretary State Board of Health, Raleigh, N. C.

Dear Doctor:—As a member of the Board of Directors of the Eastern State Hospital I have succeeded in inaugurating a movement the object of which is to subject every insane negro in the Goldsboro Asylum and those who shall be sent there in future to a most thorough investigation to see whether or not they are tuberculous, and, if so, to separate him or her from all other Asylum inmates as effectually and completely as if we were dealing with small-pox or any other equally contagious disease. Those suspected of being infected will be placed in an apartment for suspects until their proper place can be positively determined. We propose to keep the most painstaking record of all that is done or observed, not only that we may the better protect the unfortunates that have been committed to our care, but that we may possibly impress some well known truths upon our State at large. We are led to take this step just at this time because, while the mortality from other causes is much lower than that of any like institution of which I have any knowledge, our deaths from tuberculosis are painfully frequent; indeed, covering a very large per cent, of all deaths that occur in the institution. Another reason for an effort just at this time is that formal complaints by many who are entitled to opinion have been made to me that the discharged insane are serving as foci of tubercular infection in the several sections to which discharged patients have been returned. While the complaint is eminently proper, and we are thankful for the information, it is unfair to charge the Goldsboro Asylum, for it is well known, or should be, that a large proportion of

the mentally unsound have heretofore died of consumption, it matters not where they have been or how favorably they may have been situated. The object of this writing is to secure the sympathy and approval of the State Board of Health, and suggestions from it from time to time as to the wisest, most economical and humane way to save not only the insane negroes but the State at large from this ever increasing source of tubercular infection.

I will be pleased to hear from you.

Very respectfully,

D. W. Bulluck.

#### SOLDIERS' HOME.

BOARD OF DIRECTORS,

Soldiers' Home.

Gentlemen:—Representing the State Board of Health I have made a sanitary inspection of the institution under your care, and respectfully beg leave to report:

On the whole the sanitary conditions are good, but I think they could be materially improved in two respects:

The surface privy for general use, while apparently as well cared for as conveniences of that character can be, should be abolished and modern water-closets substituted. I realize the lack of means at your command, but as a water supply and sewer connections have already been installed this improvement could be made at small expense.

I noted a case of consumption in one of the general wards of the hospital. As consumption is an infectious disease this condition of affairs should be remedied by providing a small ward, or at least a special room, for eases of this class.

I was pleased to see that a comfortable new dormitory had been erected since our last inspection and to observe the general air of comfort and contentment on the part of the old veterans under the kindly management of Captain Brooks and his estimable wife.

Respectfully yours,

RICHARD H. LEWIS, M. D.,

For the Board of Health.

## STATE'S PRISON.

CENTRAL PRISON AND DEPARTMENT OF THE CRIMINAL INSANE.

BOARD OF DIRECTORS,

State's Prison.

GENTLEMEN:—The undersigned, a committee from the State Board of Health, in compliance with the act in relation to the Board of

Health, have made a sanitary inspection of the Central Prison and are glad to report that we found it in good condition.

We also inspected the Department for the Criminal Insane. While that portion of the Penitentiary set apart for this class of unfortunates is not perhaps an ideal structure for the purpose, it nevertheless seems to be fairly well arranged and to answer very well. It was generally in good condition, but the floors of the water-closets and bath-rooms should be improved. At present they are of ordinary plank of rather inferior quality, and therefore of a character to absorb water and filth. They should be replaced with cement.

The heating system in use we understand is not satisfactory. The mere statement of the fact we feel sure constitutes a sufficient appeal to your sense of justice and humanity to secure a correction of the defects at the earliest possible moment.

Respectfully.

GEO. G. THOMAS, M. D.,
RICHARD H. LEWIS, M. D.,
Committee.

#### STATE CONVICT FARMS.

BOARD OF DIRECTORS,

State's Prison.

GENTLEMEN:—Acting under the instructions of the State Board of Health, on December 12 I visited the Caledonia State Farms for the purpose of making the biennial inspection in accordance with section 3 of the Health Law.

The water supply of both the camps is from driven wells about thirty feet deep, four at each camp, with one well at Camp No. 1 eighty feet deep. I was informed by Captain C. J. Rhem of Camp No. 2, and Captain C. N. Christian of Camp No. 1, that the water from all these had been analyzed and found good with the exception of the well in the wash and bath-room of Camp No. 1, which was pronounced bad. Said well is, however, still in use for washing and bathing purposes.

The health of the camps during the last two years has been good. At Camp No. 1, with an average population of 135, there have been six (6) deaths during the past twelve months—four (4) from tuberculosis, one (1) from Uræmia and one (1) from hemorrhage.

At Camp No. 2, with an average population of 140, there have been two (2) deaths during the past twelve months—one (1) from tuberculosis and one (1) from malarial fever.

At Camp No. 1 during the past year they have had one hundred and eighty-nine (189) cases of chills (intermittent malarial fever) and twelve (12) cases of what is put down as malarial fever.

At Camp No. 2 they have had one hundred and seventy-nine (179) cases of chills and ten (10) cases of malarial fever. They have had no typhoid fever or malignant forms of malarial fever at either camp.

The above record was furnished me by Dr. F. M. Register, the physician to the camps, whom I had the pleasure of meeting, who was very courteons and seems to be very efficient. I also wish to acknowledge the prompt attention and courtesy shown me during my visit by both Superintendents—Captains C. J. Rhem and C. N. Christian.

The general sanitary condition of the camps seems to be about as good as the means at the command of the Superintendents and the character of the buildings will allow. There are, however, notwith-standing the good bill of health, some matters which merit attention.

The camps are situated in the midst of a vast open field, and there are few shade trees about them and no fruit orchards have been planted to furnish fruit to the convicts. The buildings used by the convicts are not ideal, but in our climate will, with certain comparatively inexpensive changes, answer the purpose very well. I refer to the floors with the large cracks filled with dirt, and the arrangement of the bunks, the lowest tier being so near the floor that they cannot be swept or secured under.

The privy arrangement for night use in the dormitories—two iron hoppers emptying through holes in the floor into tubs beneath—is perhaps as good an arrangement as can be made without a water supply, but it might be somewhat improved. While the tubs are emptied every morning and cleaned, and although the bowls and tubs had been freshly limed at the time of my visit and it was apparent that efforts had been made to keep them clean, the odor in the dormitories attested their presence. This odor must, of course, be more offensive at night. The free use of copperas, which is very cheap, in the tubs, or even a scoopful of dry earth after every evacuation, and tight-fitting covers to the hoppers, would greatly relieve the situation.

The convict dining-rooms are clean except the floors, which are in the same condition as those in the dormitories. They are not properly heated. The stove in the rear end is not sufficient for a room 90x30 feet.

In the guards' mess-rooms, where some of them have to remain on duty all night guarding the convicts in the dormitories, there is nothing in the way of furniture which can contribute to comfort.

The floors throughout the main buildings are in an unsanitary condition, and it is impossible to clean them.

The hospitals are the same in size and construction at each camp, 30x42 feet, ceiled on sides and overhead, are well lighted, ventilated and heated by stoves. No provision has been made for separating the infectious from the non-infectious cases, and the floors are like those of the dormitories, bad. They have the same style of privy bowls and

tubs found in the dormitories. There are no bath-rooms and no means of bathing a patient except by the ordinary wooden tub. The hospitals are clean except the floors, and there is no bad odor. In the hospital at Camp No. 1 the beds are iron, no springs, and straw mattresses. At Camp No. 2 the beds are wooden bunks, with shuck mattresses.

The wash-room at Camp No. 1 is in bad condition and has no floor. It is situated under the north-east end of the main building, on the ground. The water is supplied to it from a well, which has been shown by analysis to be bad.

The dairy at Camp No. 2 is too small, and is poorly appointed for the purpose intended. It is clean. The dairy at Camp No. 1 is even smaller than the one at Camp No. 2, it being the old dairy used by the overseer on the farm before the occupation by the State. It is clean.

In each stockade there is an open privy used by the immates in the day. These are in the form of the ordinary country privies, but have the wooden tubs underneath, said tubs, like those in the dormitories, being removed once a day, cleaned and limed.

Both camps are lighted at night with kerosene oil lamps. There is no arrangement at either camp to successfully combat fires, should they occur.

There is no building at either camp suitable for the women convicts. Those at Camp No. 2 are quartered in a loft over a barn outside the stockade. This place is poorly lighted, and at best a make-shift.

The windows of nearly all the buildings are screened with wire gauze. The doors, however, have been neglected. Along the river banks I noticed many pools or lagoons left in excavations in building the dam. These furnish ideal places for the Anopheles mosquito to breed.

#### Suggestions.

I would respectfully urge the following:

- 1. That a water tank be erected at both camps, with the necessary water pipes, plumbing and sewerage, closets, etc. The water could be pumped into these tanks by the gasoline engines, of which there is one at each camp.
- 2. That the floors be torn out of the main buildings and hospitals, concrete or cement floors be put in to replace them, and that instead of the privy arrangements now in use in said hospitals and buildings that water-closets, connected with proper sewerage, be built to replace them. Failing this, I would recommend requiring the convicts to cover immediately their evacuations with dry earth, an abundant supply of which, with a scoop, should be kept on hand.
- 3. That good bath-rooms be creeted and provided with a sufficient number of shower-baths, instead of the half-barrels now in use, and that the convicts be required to bathe certainly as often as twice a

week. By the use of these shower-baths a much larger number can be bathed in the same length of time with less water, and they are cleaner. Also, that the driven well in the wash-room at Camp No. 1 be taken up at once and water obtained from some purer source.

- 4. That provision be made to separate the infectious cases from the non-infectious, cspecially the tuberculous cases. Also, that a good long bath-tub be placed in each hospital, and that iron furniture, beds with springs and better mattresses be obtained to replace those in use at present.
- 5. That the bunks in the dormitories be replaced by others, so constructed that the floor may be swept and scoured under them. That better furniture be placed in the guard-room.
- 6. That a good dairy be built at Camp No. 1, and the one at Camp No. 2 be enlarged and that both be furnished with the necessary utensils for properly handling the milk.
- 7. That a building be erected at either camp for the women convicts. The one now in use at Camp No. 2 is unsuitable for them.
- 8. That an electric plant be erected in order to properly light both camps with a minimum risk of fire, and the ability to light up the whole camp at once in case of alarm. Also, that a fruit orchard be planted to furnish the convicts with this much needed article of diet.
- 9. That sereen doors be placed on all the sleeping apartments for convicts and guards in order to exclude mosquitoes, and that the lagoons along the dam or levee on the river bank be drained, if possible, or treated in the spring, summer and autumn with kerosene oil, in order to kill the larvæ of mosquitoes and thus diminish the malaria, which is by far the most prevalent disease which afflicts the camps.

All of which is respectfully submitted.

HENRY W. LEWIS, M. D., For the State Board of Health.

#### CONVICT CAMP NEAR DOVER.

TO THE CHAIRMAN BOARD OF DIRECTORS,

North Carolina State's Prison.

The undersigned, representing the North Carolina State Board of Health, appointed to report upon the sanitary condition of the Goldsboro Lumber Co. Convict Camp in Jones county, begs leave to submit the following:

This camp has occupied its present location since June, 1901, and thus been the prison-house at night for fifty to fifty-five convicts for these eighteen months.

The enclosure affords less than 250 feet of space for each prisoner.

It is without any plan of ventilation, and may not be ventilated save through cracks that may be in the one-inch plank walls, except when the nights are warm enough to permit the doors at each end of the building to remain open.

The roof of tarred paper appears old and patched, and I am told leaks slightly in a few places. The inner surface of the walls is fairly elean, and shows repeated applications of whitewash.

The platform upon which these fifty or more men sleep is built throughout the centre of this long building, and the bedding is so arranged thereon that they sleep in two rows, one on either side of the centre line, head to head down the whole line. Certainly a better arrangement would be to have half the beds near either side wall, so that the air the convicts breathe may be less polluted with the products of immediate exhalation.

The kidney and bowel excretions are passed into zine-plated iron buckets. The former is said to be emptied each morning, the latter as soon as passed, each into "sinks" fifty yards distant. An effort at disinfection of sinks and buckets by free and daily application of lime is said to be practiced.

The drinking water is procured from a driven pump said to be twenty feet deep, penetrating through clay and sand; however, the liquid waste from the kitchens and the black, filthy water from clothes washings of all these men flow lazily down a small ditch leading by and within four feet of the pump. A more unsanitary condition could not be more perfectly arranged.

Notwithstanding these facts, the health of the prisoners, officers and guards is, and it is claimed has been, remarkably good. I was assured that not a single day's work had been lost on account of sickness during the last several months. The general condition of the prisoners, as far as I am able to determine, is fine, and they expressed entire satisfaction at the quantity, variety and preparation of their food.

J. L. Nicholson, For the Board of Health.

December, 20, 1902.

#### CONVICT CAMPS IN MITCHELL COUNTY.

Board of Directors, State's Prison.

GENTLEMEN:—In compliance with instructions from the State Board of Health, I visited on October 24th and 25th the convict camps in Mitchell county, and beg to report as follows:

Sink Hole Camp, No. 7, is situated on Toe river. Mitchell county, about five miles from Bakersville, and is in charge of Captain J. H.

Lashley as Supervisor, and Dr. F. H. Gilreath, Physician. Boone Ford Camp, No. 8, is about five miles up the river from this point, and is in charge of Major J. H. McIver as Supervisor and Dr. F. H. Gilreath, Physician. These camps are at work on a railroad which is being built along the banks of the river, and are within a few feet of the water's edge at the foot of high mountains and precipitous hills. In some respects the situation is an ideal one for such a camp, and in other respects it is not desirable. The facilities for drainage and bathing are offset by frequent fogs and a lack of the full amount of sunshine. The first camp is rather cramped for room, but the second is somewhat more favorably situated, being in a more open flat.

As the camps are to be moved frequently, as the work progresses, the buildings are rather rude and temporary in their character, but are comfortable and conform to the requirements of sanitation as far as practicable under the circumstances. The buildings, as I saw them, were for summer use. They are to be moved very soon and will be built more closely for winter use. Ventilation is ample, fresh air being admitted by openings in the sides and foul air passing out through open ventilators on the dome of the roof. I drop a caution here as to ventilation during the winter. It will be very cold in those mountains, and it is so easy to secure warmth at the expense of ventilation.

The quarters, as they are called, are houses 20x130 feet, with an average height of 12 feet, each sheltering about 175 convicts. The bunks are arranged in a double row down the centre and are two tiers high. The beds are home-made and the bed-clothing ample. The other buildings, commissary, kitchen, dining-room, dispensary, employees' shanties, etc., are arranged on one side of these quarters.

The water used for drinking and cooking at Camp No. 7 is pure spring water brought to the premises a short distance by pipe. The drinking and cooking water at Camp No. 8 is furnished by a well, so located as not to be in danger of contamination by camp drainage. The water for laundry and bathing purposes at each eamp is taken from the river.

The food, while not such as would appeal very strongly to an epicure, is ample, well cooked, and, with one exception, of sufficient variety to conform to the established rules of dietetics. The meat used is mainly fat-back. While this is first-class of its kind, it ought to be mixed occasionally with some form of lean meat to bring about the best results. Beef is occasionally served, but I would recommend that some form of lean meat be given not less than once a week.

The camp is so located that the drainage flows off into the river. The quarters are kept clean and freshly limed every day. No foul odors were noticeable. The yards are also cleaned up daily and a liberal supply of lime used. The privies are located between the quarters and the river, and large tubs are used for vaults. These are emptied daily

into the river. For the night soil open metal vessels, one for each man, are used, which as soon as used are limed, carried out and emptied into the river.

The cleanliness of the men is looked after, and they are required to bathe and change clothing at regular intervals. The clothing is ample and changed according to season.

The health of the camps has been reasonably good. There have been no epidemics. Not a case of typhoid fever has occurred among the convicts, but one or two among the employees. Just now at Camp No. 7 there is more than the usual amount of sickness, which is mostly of a diarrheal nature. Right here I learned the interesting fact that convicts can bring about frequent movements of the bowels by their going aside for this purpose, very often as an excuse to escape work. At this camp, No. 7, there were six or eight in bed and more in hospital not confined to bed. At Camp No. 8 there were none in bed and but six or eight in hospital. Both camps are practically under the same management, have the same clothing, same fare and have the same physician. Twice the amount of sickness in one eamp than in the other would naturally arouse the suspicion that there was some local trouble about the camp to account for it. But none was found, and the true reason found in the fact that the men at Camp No. 8 were a picked set, while the other camp contained many weaklings and boys not able to resist disease.

The sick at each camp are attended to in a hospital 12x28 feet, apart from the main quarters. At No. 8 this accommodation is ample; at No. 7, where there is more sickness, room is not quite adequate. There should be room for at least twelve beds, and no sick man should be compelled to remain in quarters for lack of room in hospital.

While for general use lime is sufficient for disinfection, I would advise for hospital use some quicker disinfectant, as chlorinated lime.

My parting recommendation is, be certain that every convict and employee is vaccinated.

In eonclusion, I wish to state that my visit was entirely unexpected. There is no such thing there as seeing a visitor afar off. Dropping down those hills on the banks of Toe river is the next thing to dropping from the clouds. I saw things as they exist every day. I acknowledge with thanks the courtesies and facilities extended by those in charge of the eamps, Captain J. H. Lashley, Major J. H. McIver and Dr. F. H. Gilreath, and to express my decided opinion that the health of the camps is in painstaking, efficient hands.

Respectfully submitted,

W. P. IVEY, M. D., For the Board of Health.

#### CONVICT CAMP IN WILKES COUNTY.

Lenoir, N. C., December 28, 1902.

Board of Directors, State's Prison.

GENTLEMEN:—In accordance with instructions from the State Board of Health, I made a visit of inspection to the convict camp near Wilkesboro, N. C., on December 19, 1902, and beg to report as follows:

My visit to the camp was at an inopportune time, as it had been moved to its present location only two days before. Everything was not shaped up as they will soon be, but my visit, as an inspection, was very satisfactory, as it required no close scrutiny to discover the practical results of attention to sanitary matters. If it be true that "the proof of the pudding is in the chewing of the bag," then I might sum up my entire report in these words: there were fifty-one men in camp and not one on the sick list. There has been no fever or pneumonia or any other sickness of consequence among the men at this camp. One has died of appolexy, and during the summer there were the usual digestive disturbances due to the season.

The barracks were amply sufficient in air space and were comfortably warmed. There are not sufficient facilities for the exchange of fresh and foul air, and I would recommend that a ventilator be placed in the top of the building. The prisoners were sufficiently clothed and reasonably clean.

The commissary supplies were ample, clean, of good quality and of sufficient variety. I noted with satisfaction that more lean meat was being used here than at the other camps at the time of my visit to them, fat-backs having been exchanged for rib sides.

The dining-room, I think, might be improved upon. It is without a floor, and is heated by a cook stove only. I would recommend a plank floor and another heating stove.

The water is pure spring water, with no chance of contamination. The facilities for bathing, drainage and the disposal of sewage are ideal. The camp is immediately on the bank of a river, and all slops and sewage are emptied direct into the water.

There is no hospital building, but a tent and spring cots are in readiness, if one should be needed

This is the third convict camp I have visited this fall, and while all are under the same general management, and while I found no special fault with the others, I think that this camp is to be especially commended by a sanitary inspector, in that not one of its inmates reports unable for duty.

I wish to acknowledge with thanks the prompt courtesies of the camp's Supervisor, Mr. W. S. Cox, and the Steward, Mr. Dowtin.

Very truly yours, W. P. IVEY, M. D., For the Board of Health.

## MISCELLANEOUS SANITARY INSPECTIONS.

# MALARIAL FEVERS AT GREENSBORO.

Raleigh, March 25, 1901.

THE COUNTY SANITARY COMMITTEE,

Guilford County.

Gentlemen:—In compliance with your request I visited Greensboro on Tuesday, the 19th inst., and in company with Drs. Beall and Fox of your committee and Dr. Harrison. County Superintendent of Health, made an inspection of the locality in which malarial diseases have been prevailing, and respectfully beg leave to report:

The conditions universally accepted as productive of the malarial poison, according to both the old and the modern theory of its causation, are ponds, pools of stagnant water and low marshy lands during the warm season. The old theory of malaria was that it was a miasm or gas evolved from decaying vegetable matter under conditions of heat and moisture, the poison being distributed by air currents. The view generally held now by the medical world is that the malarial poison is not a gas or miasm but a blood parasite, first demonstrated in the blood of malarial patients by the French physician Laveran in 1880; that this blood parasite, or plasmodium malaria, in its life cycle requires for its perfect development, in common with many other parasites, what is known as an "intermediate host," and that the particular host in this case is a certain species of mosquito known as anopheles, the common or domestic mosquito of the culex variety being innocent in this respect. So that the conditions which breed mosquitoes, viz., ponds, and especially small, stagnant pools devoid of fish, which eat the larvæ, or "wiggletails," propagate malaria.

I found in the small streams running through the proposed park on Elm street, extended, very crooked. Crooked streams all have numerous holes at their curves. Those particular rivulets are said to be wetweather streams, which cease running in times of drought. In consequence the many little pools would become stagnant, and ideal breeding places for mosquitoes. In addition, and chiefly, I found several reservoirs and ponds connected with the Finishing, the Proximity and the Revolution mills, and a considerable expanse of wet, marshy, bottom lands above these mills.

In my opinion the conditions above set forth are clearly a menace to the public health. At the same time they are inimical to the business interests of the owners of the lands in that neighborhool by reducing their value, of the county in the smaller revenue derived from their low assessment, and of the mill owners by causing sickness among their operatives. With due regard to the interests of all concerned, these conditions should be abated as soon as possible, with the almost certain elimination of the class of diseases under consideration from that locality in a very few years. To this end I would respectfully recommend:

- 1. That the courses of all the small streams be straightened.
- 2. That the dams of all ponds be cut, the water, if needed for industrial purposes, being piped down and stored in reservoirs.
- 3. That all reservoirs be kept covered from April 1st to November 1st with crude petroleum or equal parts of crude petroleum and tar, one ounce to every fifteen feet of water surface being applied every two weeks.
- 4. That all the marshy land be thoroughly drained and that it be cultivated.

While none should be neglected, I would especially emphasize the second and fourth recommendations.

Very respectfully yours,

RICHARD H. LEWIS, M. D.,

Secretary State Board of Health.

#### BROADOAKS SANATORIUM, AT MORGANTON.

BROADOAKS SANATORIUM COMPANY,

Morganton, N. C.

Gentlemen:—In accordance with your request to make a sanitary inspection of your institution and to pass upon the proposed line of sewer, both as to location and quality of pipe, during our official inspection of the State institutions in Morganton we visited the Sanatorium, inspected the same, including its surroundings, and beg leave to report:

We were much pleased with the location of the Sanatorium buildings—on a high hill commanding beautiful views of the mountains and draining away from the establishment in every direction.

Although the improvements and additions to the original building were not entirely finished, they were sufficiently advanced, the plumbing being complete, for us to give an opinion. We found the airspace per patient allowed sufficient, and the arrangements for light and ventilation good. In this last particular we were especially pleased with the bath-rooms and water-closets, which, contrary, unfortunately, to what we find in so many institutions, were so located as to be flooded with sunlight, nature's great purifier and germ-destroyer. The plumbing seemed to have been well done and the fixtures were of modern and approved pattern.

We feel that you deserve to be congratulated on your water supply.

An abundant supply of beautiful pure water from an overflowing bored well seventy feet in depth would, in our judgment, entitle any institution or individual possessing it to congratulations. If you carry out the intentions which we understand you to entertain, namely, to divert the little rivulet which now runs by the well from its course and to make such terraces or ditches on each side of the little valley in which the well is located as may be necessary to intercept and conduct to a point below all surface washings from above, we do not see how any infectious material can reach the water. Another protection against infection lies in the strong upward current in the overflowing well.

In regard to the sewer, we have to say that we see no objection to the proposed location along the ridge, and are of opinion that a pipe of first-class vitrified terra cotta properly laid with good cement would be, especially in that soil, entirely safe.

> G. G. Thomas, M. D., Richard H. Lewis, M. D.

#### SEWERAGE AT BLOWING ROCK.

BOARD OF ALDERMEN,

Blowing Rock.

GENTLEMEN: - The act amending the charter of the town of Blowing Rock, passed by the Legislature in 1899, among other things provided that the ordinance affecting the disposal of sewage from property without the corporate limits of Blowing Rock should be approved by the Board of Health before being effective. This applied, chiefly, between the municipal authorities of Blowing Rock and the proprietors of the Green Park Hotel, it being elaimed that the disposal of sewage from this hotel into a creek running behind this hotel and down a valley on the western side of the town was a probable source of sickness and a menace to health. In accordance with the requirements of the act of the Legislature, the undersigned visited Blowing Rock and its vicinity and carefully examined the stream above mentioned, taking in the most of its course from a point at which the sewer of the hotel enters it to the gate of Mr. Stringfellow's premises, covering two miles or more. This stream receives also the sewage matter from the Blowing Rock Hotel and Mrs. Stringfellow's boarding-house. The sewage matter from the Green Park Hotel enters a bold stream which is very tortuous in its course, running over rocks, grassy plots and underbrush. We first saw the stream from the fording-place below the stables of the Green Park Hotel up to the opening of the sewer, and but little of the matter from the hotel was apparent at the fordingplace.

In company with his Honor, the Mayor, the stream was again inspected from a point just back of the Blowing Rock Hotel, taking in the outlet of the sewer of that house, and the small affluent of the creek which carries down the sewage matter from the Blowing Rock Hotel into the larger stream. A careful examination made directly along the course of the creek did not develop any evidence of fecal contamination. If it was present in the water, it was in minute suspension or solution. Complaint was made that the springs along the course of this creek were contaminated by this water. We were shown by his Honor, the Mayor, two springs-the first one, at a point about midway between the entrance of the sewer from the Blowing Rock Hotel and Mr. Stringfellow's gate, was on a level considerably higher than the stream and back from its bed. Even in excessive rain-fall and freshet it is hardly probable that it would be contaminated by water from this creek. The other spring was under the high bank of the creek near Mr. Stringfellow's gate. This would be easily overflowed by a freshet from the creek, but such an event is only occasional, and there is to be considered the fact that immediately above and back of this spring are two occupied houses with out-houses on the premises, into which fecal matter and urine are deposited. At the first spring noted there was a large and dirty hog-pen near the spring, in addition to the out-houses, and all of the seepage through the soil of accumulations from human beings around both of these springs, and from the washings of the hillsides, are more probable and constant sources of contamination than the creek water after it has passed over nearly two miles before reaching these sources of domestic water supply. The undersigned were not given an opportunity to see any evidence of this creek so affecting the people living near it as to cause sickness that could be attributed to the sewage emptied into the stream. Even if we admit that sickness has arisen from the use of the water in this creek, there is the patent fact staring us in the face that the hillside from the Green Park Hotel down the whole course of the two miles of the stream inspected is more or less covered with dwelling-houses having surface privies, in none of which were we certainly assured that any definite or well directed methods were adopted to neutralize fecal matter deposited in them. Every rain-storm and the snows of winter, thawing in the spring, carry down these accumulations into the stream in the valley. We were not informed, however, that any definite claim was ever set up that the sewage matter from the Green Park Hotel was discernible where the creek entered the town limits, or that the sickness was more prevalent since such disposal of sewage into this creek had been made. The claim that the milk from the cows which are pastured in this valley would be a source of danger is a point of little value. There is no reason to believe that contaminated water carrying small portions of fecal matter, either typhoid or colon

bacilli, would pass through the digestive apparatus of the eow and be finally secreted in the milk and become a source of contamination. In fact, every statement to this effect has been denied upon good authority. If the cows stood in water deep enough to cover the udders, the milk might be contaminated from the germs left on the teats, but as the cows would not probably use this pasture in time of high water, this contention seemed to us to be very far-fetched. In short, the undersigned did not find any reason to condemn the sewer complained of, nor was there any evidence adduced to justify the opinion that any sickness had occurred in the town of Blowing Rock from the sewage matter deposited in the stream from the Green Park Hotel, Blowing Rock Hotel or Mrs. Stringfellow's boarding-house. They are, therefore, compelled to refuse their approval to the ordinance of the town which was intended to enjoin the further use of the stream for the disposal of sewage matter from the Green Park Hotel.

This committee from the Board of Health desire in this connection to thank your Mayor, Dr. C. T. Parlier, for his earnest and intelligent aid in this inspection, and for his very courteous treatment extended to us during our stay in your midst.

Yours very truly,

GEO. GILLETT THOMAS, M. D., RICHARD H. LEWIS, M. D.,

Committee.

August 14, 1901.

ST. MARY'S SCHOOL, AT RALEIGH.

Raleigh, N. C., November 13, 1902.

REV. T. D. BRATTON, D. D.,

Rector St. Mary's School, Raleigh, N. C.

DEAR SIR:—In compliance with your request I made, on Monday, 10th inst., with a view to locating, if possible, the cause of the suspected case of typhoid fever in the person of one of the pupils, a sanitary inspection of the school and premises. In the course of the inspection I took a sample of drinking water for analysis by the State Biologist, from the main cooler, which I understood you to say is generally used by the girls, and also one from the well which, while not generally used for drinking purposes, might be partaken of.

I found the plumbing in excellent condition and nothing unsanitary about the premises. The Biologist reports both samples of water pure and uncontaminated, and that the water "could not have caused typhoid." In my opinion, therefore, there is nothing about the school to which the attack can be attributed.

Health-6

In a very large proportion of the cases the origin of typhoid fever cannot be located. For some unexplained reason it is more prevalent some years than others. From the reports coming to my office from the health officers of the various counties and municipalities, the disease appears to be rather more prevalent throughout the State this year than usual. It is essentially a disease of youth and adolescence. In so large a number of persons of the most susceptible age, especially when the causative influence is active, an occasional case need not surprise us. When people visit at all there is generally no telling where the germs are taken in.

Yours truly,

RICHARD H. LEWIS, M. D., Secretary State Board of Health.

# MUNICIPAL WATER SUPPLIES.

Since our last report four additional towns have installed water-works—High Point, Waynesville, Wadesboro and Southern Pines. These bring the number of public supplies up to twenty-seven.

The Act to Protect Water Supplies requires all public water companies to have made, every quarter at least, analyses, both chemical and biological, of their supplies; but there was no provision in the law requiring the companies to furnish copies of the analyses to the Secretary of the State Board, and consequently we are unable to say that requirement has been met—but poorly, we fear. It is hoped that additional legislation may be obtained enabling the Board itself to have this work done. An occasional analysis does not, of course, establish definitely the character, either good or bad, of drinking water, but it is of value—the greater the oftener it is made. If the legislation referred to can be obtained, a monthly biological examination will be within reach. By these more frequent tests, supplemented by chemical analyses from time to time, the normal character of each particular supply can be determined, and thereafter variations can be better judged.

The usual biennial inspection by the Engineer of the Board, with the analyses, both chemical and biological, of samples taken by him, is as follows:

# REPORT OF J. L. LUDLOW, C. E., M. S., ENGINEER OF THE BOARD.

WINSTON-SALEM, N. C., January 20, 1903.

Dr. RICHARD H. LEWIS,

Secretary State Board of Health, Raleigh, N. C.

DEAR SIR:—In compliance with the instruction of the Board of Health at the last annual meeting, I have made an official inspection of the water supplies of the cities and towns of the State, and have the honor to report as follows:

My inspections were made during the months of November and December, 1902. During this time I personally visited about twenty of the twenty-seven cities and towns which have public water supplies. I am gratified to state that in many cases the Superintendents and other officials, who are responsible for the character and quality of the water supplies, are keenly alert to the importance of their duties as the conservators of the health of the people and the economic interests of the cities and towns, as determined by this important adjunct of municipal government. But there are still too many instances where the purpose appears to be simply to furnish water, without proper regard to its character and purity. The State law requiring inspection of the water-sheds and analyses of the water furnished by public supplies to be made quarterly has not been generally observed, and it appears to me very important that this requirement should be made mandatory in its operation rather than merely suggestive, as it is in the present form of the statute. The analyses should be made with greater frequency, too-at least monthly instead of quarterly, as at present required.

There is abundant evidence to show that the State Board of Health should continue to exercise a paternal control over the public water supplies. A great field of usefulness is therein presented, by proper and energetic occupancy of which much good can be rendered the State. Though the suggestions of the Board are frequently sought, and usually very favorably received, more good could doubtless be accomplished if the Board were clothed with proper statutory authority to make its recommendations mandatory rather than merely suggestive, as at present.

Owing to the topography of the State and the size and location of the cities and towns, with few exceptions, the only available sources of water supply are small surface streams, which are not naturally of a high degree of purity, either physically, chemically or biologically. Therefore a filtration system is generally a necessary adjunct to the public water supplies, and is in many cases the chief dependence for a proper degree of purity. A filter plant of proper size, intelligently and properly operated, can be confidently depended upon to furnish a pure and wholesome water, but whether or not it is furnishing such water can only be directly determined by biological examination, and the necessity of such examinations being made frequently must be apparent. The present requirements that such examinations be made quarterly is good, so far as it goes, but it is barely a start, and the proposition to establish a biological laboratory, to be under the direction of the State Board of Health, and requiring all purveyors of water, whether public or private corporations, to have biological examinations made at least monthly, is a long step in the right direction.

To intelligently consider the character of a water supply, I conceive

the essential element to be the condition and surroundings of the source of supply as determined by a sanitary inspection of the watershed in eases of surface supplies, and the possibilities of contamination influences in other supplies. Any gross pollution or dangerous exposure ean usually be detected by such an inspection, but for determining dangerous pollution from the more subtle influences, chemical and biological examinations are very essential, and the only practical safeguard is the very frequent application of these three modes of inquiry. While the bacterial examination is much more significant in determining the character of the water in its relation to the health of the consumers, the chemical analysis also is important, as valuable corroborative testimony of the results determined by sanitary inspection and a biological examination, in that it frequently will detect excessive nitrogenous organic matter, when specific disease germs may not be readily determined by biological analysis that may be quite inimical to health in itself and a danger signal of probable future condition.

In considering the preparation of this report it has been my desire to fix a standard of purity, both chemical and biological, that should be required of the public water supplies of this State. But the conclusion is reached that it is too early yet to undertake to fix any positive standard, owing to the lack of data as to what it is practicable to accomplish by the proper treatment of the waters that are available for public supplies.

'The following standard for chemical purity, while it is thought to be rather a fair one, is intended to be merely tentative and to be modified as further and additional data, which will show what degree of purity it is practicable to attain, are made available. Where variable quantities are given the lower ones are intended to apply to the higher altitudes in the western portion of the State and the higher allowances for the coastal plane in the eastern portion.

Chlorine	.28	grains per U.S. gallon.
Free ammonia	.0408	parts per million.
Albuminoid ammonia	.0612	parts per million.
Nitrogen as nitrates	.25	parts per million.
Nitrogen as nitrites	.005	parts per million.

In reference to the large bacterial count shown in some cases by the quantitative bacterial analysis, it should be said that the samples were usually drawn from taps near the center of the distribution systems, and represent the water as it is furnished to the consumer and not as it comes directly from the filters or source of supply; and further, that the samples were shipped without being packed in ice or other protection against the naturally rapid increase of the microscopic life that may have been in the sample when collected. So that the real

and useful significance of the bacterial examinations is in the qualitative rather than in the quantitative results.

The samples of water which were taken as a part of my inspection were analyzed chemically by Dr. B. W. Kilgore, State Chemist, and the physical and biological examinations were made by Dr. Gerald McCarthy, the Biologist of the State Board of Agriculture. The results of their analyses are made a part of this report, together with the comments of the analyst.

In the following pages I shall consider the cities and towns in alphabetical order, and in addition to the report of the analysts will make general observations and suggestions that appear pertinent.

#### ASHEVILLE.

The water-works of the city of Asheville is owned and operated by the city. The Superintendent is Mr...... The source of supply is from the Swannanoa river, elevated to a stand-pipe and passed through a mechanical pressure filter before it is delivered to the pipe distribution system. The analyses show this to be a very pure water, but it is known to be quite turbid occasionally, owing to the improper arrangement of the filter. To overcome this condition would require the installation of a larger filter plant or changing the arrangement so that the filter would operate at a slower and more uniform rate rather than at the variable rate of consumption, as the present arrangement requires. At the present intake the water-shed includes the villages of Swannanoa, Black Mountain and Montreat, but at the time of my inspection the pipe line was being extended several miles toward the mountains where the water will be taken from the same stream but beyond the drainage of the villages named. The analyses are as follows:

# Biological.

Color, 0; odor, 0; reaction, neut.; temperature, 14° C.; turbidity, 0; sediment, 0. Contains bacteria of saprophytic group only. Total bacteria per cubic centimeter, 480. Remarks by analyst: Unusually pure water!

#### Chemical.

Total solid matter in solution and suspension	2.3	grains per U.S. gallon.
Hardness	1.35	degrees Clark's scale.
Equivalent to calcium carbonate	.35	grains per U.S. gallon.
Chlorine	.15	grains per U.S. gallon.
Free ammonia	.0682	parts per million.
Albuminoid ammonia	.0968	parts per million.
Nitrogen as nitrates	.185	parts per million.
Nitrogan as nitritas		narts per million.

#### CHARLOTTE.

The water-works of the city of Charlotte is owned and operated by the city. The Superintendent is Mr. C. H. Campbell. The source of supply is from two creeks, viz., Sugar creek and Briar creek. The water is collected in a large sedimentation basin and passed through a gravity filter plant of fairly good type before being pumped into the stand-pipe and pipe distribution system. The water-sheds of this supply have considerable exposure to contaminating influences by reason of the nearness of Sugar creek to the city, but the management is very zealous and active in protecting the water-sheds by thoroughly systematic and frequent sanitary inspections. Even with this, however, the writer does not consider Sugar creek a safe source of water supply, and has recently noted with much satisfaction the proposed abandonment of this stream as a part of the source of supply. The analyses that have been made from time to time indicate a safe and wholesome water. The analyses of the samples taken at the time of my inspection are as follows:

# Biological.

Temperature, 22° C.; turbidity, 0; sediment, 0; color, 0; odor, weedy; reaction, neut.; gas production, 0; nitrite test, neg. Contains bacteria of saprophytic group only. Total bacteria per cubic centimeter, 600. Remarks by analyst: Very good water!

#### Chemical.

Total solid matter in solution and suspension	4.4	grains per U.S. gallon.
Hardness	2.50	degrees Clark's scale.
Equivalent to calcium carbonate	1.50	grains per U.S. gallon.
Chlorine	.25	grains per U.S. gallon.
Free ammonia	.0566	parts per million.
Albuminoid ammonia	.0786	parts per million.
Nitrogen as nitrates	.22	parts per million.
Nitrogen as nitrites		parts per million.

#### CONCORD.

The water-works of the town of Concord is owned and operated by the town. The Superintendent is Mr. G. W. Brown. The supply is taken from driven wells 500 to 1,000 feet deep, located within the town limits, and the water is presumably obtained from crevices and faults in the primary granite formation.

The analyses would indicate some impurities due to organic matter that should not be expected in water from such a source. This is thought to be due to surface water seeping into the wells, which it will be undertaken to overcome in the extensive improvements to the works which are about to be inaugurated. The analyses are as follows:

# Biological.

Temperature. 23° C.; turbidity, 0; sediment, sand; color, 0; odor, 0; reaction, alkaline; gas production,....; nitrate test,..... Contains bacteria of saprophytic group only. Total bacteria per cubic centimeter, 4,800. Remarks by analyst: Water might be cleaner!

## Chemical.

Total solid matter in solution and suspension 2	26.2	grains per U.S. gallon.
Hardness 14	4.75	degrees Clark's scale.
Equivalent to calcium carbonate 13	3.75	grains per U.S. gallon.
Chlorine	.40	parts per million.
Freea mmonia	0664	parts per million.
Albuminoid ammonia	0521	parts per million.
Nitrogen as nitrates		parts per million.
Nitrogen as nitrites		parts per million.

#### DURHAM.

The water-works of the city of Durham is owned and operated by the Durham Water Company, Mr. J. C. Michie, Superintendent. The supply is taken from Eno river and a small tributary thereto. The water is filtered with a very good gravity mechanical filter and pumped to a large reservoir which supplies the pipe distribution system. The management of the company is zealous in protecting the character and purity of the water supply in so far as the character of the watershed will permit, and the analyses which have been made quarterly in compliance with the State law indicates the water furnished to be good and wholesome. The analyses of the samples taken at the time of my inspection are as follows:

## Biological.

Color, 0; odor, 0; reaction, neut.; temperature, 17° C.; turbidity, 0; sediment, 0; nitrite test,.... Contains bacteria of saprophytic group only. Total bacteria per cubic centimeter, 840. Remarks by analyst: Excellent water!

#### Chemical.

Total solid matter in solution and suspension	3.6	grains per U.S. gallon.
Hardness	2.45	degrees Clark's scale.
Equivalent to calcium carbonate	1.45	grains per U.S. gallon.
Chlorine	.20	grains per U.S. gallon.
Free ammonia	.0744	parts per million.
Albuminoid ammonia	.0657	parts per million.
Nitrogen as nitrates		parts per million.
Nitrogen as nitrites		parts per million.

#### FAYETTEVILLE.

The analyses are as follows:

# Biological.

# Fayetteville Water Company.

Temperature, 23° C.; turbidity, 0; sediment, 0; color, 0; odor, 0; reaction, neut.; gas production,....; nitrite test,.... Contains bacteria of saprophytic group only. Total bacteria per cubic centimeter, 240. Remarks by analyst: Excellent water!

# Fountain Head Supply.

Temperature, 25° C.; turbidity, 0; sediment, 0; color, 0; odor, 0; reaction, neut.; gas production,....; nitrite test,.... Contains bacteria of saprophytic group only. Total bacteria per cubic centimeter, 120. Remarks by analyst: Very good water!

#### Chemical.

No report received.

#### GASTONIA.

The water-works of the town of Gastonia is owned and operated by the town. Mr. Harry Rutter is Superintendent. The supply is taken from Long creek and the water is passed through a gravity mechanical filter of high grade and efficiency to a clear water reservoir, from whence it is pumped into the pipe distribution system. The source of supply has no unusual exposure on the water-shed. The stream generally flows through an unsettled country, and with proper attention to the filtration plant should yield a very safe and wholesome water. The analyses are as follows:

#### Biological.

Temperature, 23° C.; turbidity, 0; sediment, sand; color, dingy; odor, slight; reaction, neut.; gas production, 0; nitrite test..... Contains bacteria of saprophytic group only. Total bacteria per cubic centimeter, 360. Remarks by analyst: Very good water!

#### Chemical.

Total solid matter in solution and suspension 4.2	grains per U. S. gallon.
Hardness 2.45	degrees Clark's scale.
Equivalent to calcium carbonates 1.45	grains per U.S. gallon.
Chlorine35	grains per U. S. gallon.
Free ammonia	parts per million.
Albuminoid ammonia	parts per million.
Nitrogen as nitrates	parts per million.
Nitrogen as nitrites	parts per million.

#### GOLDSBORO.

The water-works of the city of Goldsboro is owned and operated by the city. Mr. John S. Dortch is Superintendent. The source of supply is Little river, a tributary of the Neuse. The water is filtered through a good type of gravity mechanical filter, but the arrangements for filtering the water could be improved and give very much better results. The source of supply is of the average standard available in the eastern portion of the State, and by proper arrangement and operation of the filtration plant should yield a safe and wholesome supply. The excessive organic matter shown by the analyses is probably of vegetable origin due to the character of the country through which the stream flows, and could be removed by proper attention to the filtration. The analyses are as follows:

Biological.

Color, 0; odor, 0: reaction, neut.: temperature, 18° C.; turbidity, 0; sediment, 0: nitrite test.....Contains bacteria of putrefactive group. Total bacteria per cubic centimeter, 6,800. Remarks by analyst: The water is dirty, but not polluted by sewage; could be made safe and good by filtration!

Chemical.

Total solid matter in solution and suspension	4.00	grains per U.S. gallon.
Hardness	1.40	degrees Clark's scale.
Eqivalent to calcium carbonate	.40	grains per U.S. gallon.
Chlorine	.30	grains per U.S. gallon.
Free ammonia	.0482	parts per million.
Albuminoid ammonia	.1271	parts per million.
Nitrogen as nitrates	.12	parts per million.
Nitrogen as nitrites		parts per million.

# GREENSBORO.

The water-works of the city of Greensboro is owned and operated by the city. The Superintendent is Mr. Sergeant. The source of supply is North Buffalo creek. The water is collected in a sedimentation basin before being pumped into the water tower and pipe distribution system. The analyses do not show the water to be of the proper degree of purity, but a filtration plant which is now being installed is expected to improve the quality and make it a safe and wholesome water. The analyses are as follows:

# Biological.

Color, milky; odor, pungent; reaction, neut.; temperature, 16° C.; turbidity, very great; sediment, sand; nitrite test,.... Contains bacteria of saprophytic group only. Total bacteria per cubic centimeter, 3,400. Remarks by analyst: Very fair water for a public supply.

#### Chemical.

Total solid matter in solution and suspension		
Hardness	3.9	degrees Clark's scale.
Equivalent to calcium carbonate	2.9	grains per U. S. gallon.
Chlorine	.30	grains per U. S. gallon.
Free ammonia	.0792	parts per million.
Albuminoid ammonia	.1547	parts per million.
Nitrogen as nitrates		parts per million.
Nitrogen as nitrites		parts per million.

#### HENDERSON.

The water-works of the town of Henderson is owned and operated by the Henderson Water Company. The Superintendent is Mr. J. H. Bridgers. The supply is taken from a large pond which is formed by a dam across a small stream. The water is filtered before being pumped into the stand-pipe distribution system.

The water-shed of the stream from which the water is taken is badly exposed to contamination, the natural drainage of a portion of the town, including a cotton factory and the factory settlement being directly tributary to it. The management of the company appears to have been commendably zealous in protecting the water supply from contamination as far as possible under the existing conditions, but the analyses indicate that there is very serious contamination in this water supply. The character could probably be very much improved by a modification of the present filtration plant and more thorough filtration. The analyses are as follows:

## Biological.

Color, dingy; odor, 0; reaction, neutral; temperature, 24° C.; turbidity, 0; sediment, 0; nitrite test,.... Contains bacteria of sewage group. Total bacteria per cubic centimeter, 24,000. Remarks by analyst: The water is very dirty and shows evidence of sewage pollution!

Second sample analyzed in January the Biologist reports on as follows: Sample seems identical with first sample. Bacteria per c. c., 16,000. No coli in this sample, but putrefactive germs, indicating putrefying organic matter in too large amount!

# Chemical.

Total solid matter in solution and suspension	3.7	grains per U.S. gallon.
Hardness	1.55	degrees Clark's scale.
Equivalent to calcium carbonate	.55	grains per U. S. gallon.
Chlorine	.35	grains per U.S. gallon.
Free ammonia	.1769	parts per million.
Albuminoid ammonia	.1953	parts per million.
Nitrogen as nitrates		
Nitrogen as nitrites		parts per million.

#### HIGH POINT.

The water-works of the town of High Point is owned and operated by the town. The Superintendent is Mr...... The supply is taken from the head waters of Deep river. The analyses show some contamination, which may be overcome by proper filtration. A filtration plant is now being installed. The analyses are as follows:

## Biological.

Temperature, 20° C.; turbidity, very great; sediment, clay; color, earthy; odor, earthy; reaction, neut.; gas production,...; nitrite test.... Contains bacteria of saprophytic group only. Total bacteria per cubic centimeter, 600. Remarks by analyst: Very good water, barring earth in suspension.

#### Chemical.

Total solid matter in solution and suspension	6.4	grains per U.S. gallon.
Hardness	2,60	degrees Clark's scale.
Equivalent to calcium carbonate	1.60	grains per U.S. gallon.
Chlorine-	.30	grains per U.S. gallon.
Free ammonia	.0507	parts per million.
Albuminoid ammonia	.1244	parts per million.
Nitrogen as nitrates	.242	parts per million.
Nitrogen as nitrites		parts per million.

# LUMBERTON.

The water-works of the town of Lumberton is owned and operated by the town. The Superintendent is Mr....... The source of supply is taken from Lumber river at a point opposite the town where it is exposed to the drainage and sewage of a portion of the town. The source of this water supply should be changed either by taking the water from the river above the town drainage and filtering it or by utilizing the driven well which the town owns and which yields a quantity of water probably sufficient for the town for a few years. The biological analysis does not appear to indicate a bad water, but the chemical analysis does indicate quite an excessive amount of organic matter which, though it may not be the specific cause of disease, is undesirable for a public water supply and should be remedied. The analyses are as follows:

## Biological.

Color, 0; odor, 0; reaction, neut.; temperature, 18° C.; turbidity, 0; sediment, 0; nitrite test,.... Contains bacteria of saprophytic group only. Total bacteria per cubic centimeter, 1,600. Remarks by analyst: Good water!

#### Chemical.

Total solid matter in solution and suspension	2.7	grains per U. S. gallon.
Hardness	1.00	degrees Clark's scale.
Equivalent to calcium carbonate		grains per U. S. gallon.
Chlorine	.25	grains per U. S. gallon.
Free ammonia	.0659	parts per million.
Albuminoid ammonia	.1179	parts per million.
Nitrogen as nitrates	.162	parts per million.
Nitrogen as nitrites		parts per million.

#### MONROE.

The water-works of the town of Monroe is owned and operated by the town. The Superintendent is Mr...... The source of supply is a deep well. The analyses are as follows:

## Biological.

Temperature. 26° C.; turbidity, 0; sediment, 0; color, 0; odor. 0; reaction, alkaline; gas production, 0; nitrite test,.... Contains bacteria of putrefactive group. Total bacteria per cubic centimeter, 3,500. Remarks by analyst: The water is dirty, but not polluted.

#### Chemical.

No report received.

## NEW BERN.

The water-works of the town of New Bern is owned and operated by the town. The Superintendent is Mr...... The source of supply is from a deep well. The analyses are as follows:

# Biological.

Temperature, 25° C.; turbidity, 0; sediment, blk. woody; color, dingy; odor, 0; reaction, alkaline; gas production,.....; nitrite test,.... Contains bacteria of putrefactive group. Total bacteria per cubic centimeter, 7,000. Remarks by analyst: The water is very dirty, but not polluted by sewage. Can be greatly improved by filtration!

# Chemical.

Total solid matter in solution and suspension	11.9	grains per U. S. gallon.
Hardness	10.00	degrees Clark's scale.
Equivalent to calcium carbonate	9.00	grains per U.S. gallon.
Chlorine	.80	grains per U. S. gallon.
Free ammonia	.0621	parts per million.
Albuminoid ammonia	.0899	parts per million.
Nitrogen as nitrates	trace	parts per million.
Nitrogen as nitrites		parts per million.

#### RALEIGH.

The water-works of the city of Raleigh is owned and operated by the Wake Water Company. The Superintendent is Mr. E. B. Bain. The source of supply is Walnut creek. Owing to the location of this stream the water-shed has some unfavorable exposures, but the management of the works is very zealous and active in every practicable effort to protect the water-shed and prevent pollution of the supply, sanitary inspections of the entire water-shed being made very frequently and every cause of possible pollution removed. The water is treated by a very high grade and efficient mechanical filter plant before being delivered to the water tower and pipe distribution system. The analyses which have been made quarterly show the water to be very good and wholesome. The analyses of the samples taken at the time of my inspection are as follows:

## Biological.

Color, 0; odor, 0; reaction, neutral; temperature, 17° C.; turbidity, 0; sediment, 0; nitrite test,.... Contains bacteria of saprophytic group only. Total bacteria per cubic centimeter, 1,300. Remarks by analyst: Good water for a public supply!

## Chemical.

Total solid matter in solution and suspension	2.9	grains per U.S. gallon.
Hardness	1.50	degrees Clark's scale.
Equivalent to calcium carbonate	.50	grains per U.S. gallon.
Chlorine	.30	grains per U.S. gallon.
Free ammonia	.0315	parts per million.
Albuminoid ammonia	.0560	parts per million.
Nitrogen as nitrates	.05	parts per million.
Nitrogen as nitrites		parts per million.

#### REIDSVILLE.

The water-works of the town of Reidsville is owned and operated by the town. The Superintendent is Mr. R. Milton. The source of supply is from a large shallow well near a small branch or creek. The water is thought to be filtered by natural process before reaching the well, but the analyses, particularly the chemical, indicate that the water contains excessive organic matter and is not of the high grade of purity that it should be for a public supply. The analyses are as follows:

## Biological.

Temperature, 20° C.; turbidity, 0; sediment, 0; color, 0; odor, 0; reaction, neutral; gas production, 0; nitrite test,.... Contains bacteria of saprophytic group only. Total bacteria per cubic centimeter, 1,440. Remarks by analyst: Fair water; might be better!

#### Chemical.

Total solid matter in solution and suspension 6.8	grains per U.S. gallon.
Hardness 5.45	degrees Clark's scale.
Equivalent to calcium carbonate 4.45	grains per U.S. gallon.
Chlorine60	grains per U.S. gallon.
Free ammonia	2 parts per million.
Albuminoid ammonia	7 parts per million.
Nitrogen as nitrates 1.17	parts per million.
Nitrogen as nitrites	parts per million.

#### ROCKY MOUNT.

The water-works of the town of Rocky Mount is owned and operated by the town. The Superintendent is Mr. H. E. Frost. The source of supply is Stoney creek, which flows through a clean country and has a good water-shed for a public supply except for a mill-pond which is maintained on the stream about a mile above the water-works intake. With this removed it would be an ideal water supply for the eastern part of the State. The water is filtered through a very efficient type of gravity mechanical filter, but the analyses indicate that the filtration process is not given proper attention and is not accomplishing such results as should be reasonably expected of it. The analyses are as follows:

# Biological.

Temperature, 16° C.; turbidity, 0; sediment, 0; color, 0; odor, aromatic; reaction, neutral; gas production....; nitrite test,.... Contains bacteria of saprophytic group only. Total bacteria per cubic centimeter, 7,800. Remarks by analyst: The water is rather dirty!

#### Chemical.

Total solid matter in solution and suspension———————————————————————————————————		
Equivalent to calcium carbonate		_
Chlorine	.40	grains per U.S. gallon.
Free ammonia		
Albuminoid ammonia		
Nitrogen as nitrates		
Nitrogen as nitrites-		parts per million.

## SALEM.

The water-works of the town of Salem is owned and operated by the Salem Water Company. The Superintendent is Mr. Hy. F. Shaffner. The source of supply is from a spring, supplemented by some shallow wells about two miles from town. Judging from the results of the biological

analysis and the surroundings of the spring from which the greater portion of the supply is drawn it is not thought that the excess of nitrates shown in the chemical analysis could be considered as indicating serious impurity. The analyses are as follows:

## Biological.

Temperature, 22° C.; turbidity, 0; sediment, 0; color, 0; odor, grassy; reaction, neutral; gas production....; nitrite test,.... Contains bacteria of saprophytic group only. Total bacteria per cubic centimeter, 480. Remarks by analyst: Very good water!

## Chemical.

Total solid matter in solution and suspension	2.00	grains per U.S. gallon.
Hardness	1.00	degrees Clark's scale.
Equivalent to calcium carbonate	.00	grains per U. S. gallon.
Chlorine	.20	grains per U.S. gallon.
Free ammonia	.0432	parts per million.
Albuminoid ammonia	.0437	parts per million.
Nitrogen as nitrates	.642	parts per million.
Nitrogen as nitrites		parts per million.

#### SALISBURY.

The water-works of the city of Salisbury is owned and operated by the city. The Superintendent is J. W. Neave. The source of supply is from.....creek. The water is passed through a pressure filter plant before being delivered to the stand-pipe and pipe distribution system. The water-shed is quite large and has considerable population and cannot be considered as a desirable source of water supply. The management, however, is very energetic in guarding and protecting the water supply from any contamination that is reasonably preventable, and the analyses that have been made from time to time have indicated the water to be safe and wholesome. When I made my inspection and collected the sample the conditions appear to have been unusually bad, and analyses that the management has had made since that time indicate the water to be safe and wholesome. The filtration plant is quite defective and should be improved. With such a source of supply a perfectly arranged filter plant of ample capacity and intelligently and carefully operated is imperatively needed to insure pure and wholesome water to the consumers. The analyses of the samples taken at the time of my inspection are as follows:

# Biological.

Color, 0; odor, slight; reaction, neut.; temperature, 12° C.; turbidity, 0; sediment, 0; nitrite test,.... Contains bacteria of putre-

factive class only. Total bacteria per cubic centimeter, 14,400. Remarks by analyst: The water is very foul and may become dangerous, but present examination shows no feeal bacteria. Could be greatly improved by filtering.

## Chemical.

Total solid matter in solution and suspension		
Free ammonia		
Albuminoid ammonia	.1359	parts per million.
Nitrogen as nitrates	.25	parts per million.
Nitrogen as nitrites		parts per million.
Albuminoid ammonia	.20 .0644 .1359 .25	grains per U. S. gallon. parts per million. parts per million. parts per million.

#### SANFORD.

The water-works of the town of Sanford is owned and operated by the town. The Superintendent is Mr....... The source of supply is a small stream some distance from town and the water is filtered before being delivered to the water tower and pipe distribution system. The analyses are as follows:

# Biological.

Temperature, 20° C.; turbidity, 0; sediment, 0; color, dingy; odor, 0; reaction, neutral; gas production,.... nitrite test,.... Contains bacteria of saprophytic group only. Total bacteria per cubic centimeter, 360. Remarks by analyst: Very good water!

## Chemical.

Total solid matter in solution and suspension	3.00	grains per U. S. gallon.
Hardness	1.00	degrees Clark's scale.
Equivalent to calcium carbonate		grains per U. S. gallon.
Chlorine	.30	grains per U.S. gallon.
Free ammonia	.0626	parts per million.
Albuminoid ammonia	.1190	parts per million.
Nitrogen as nitrates	.19	parts per million.
Nitrogen as nitrites		parts per million.

#### SOUTHERN PINES.

The analyses are as follows:

# Biological.

Temperature, 20° C.; turbidity, 0; sediment, 0; color, 0; odor, 0; reaction, neutral; gas production,....; nitrite test,.... Contains

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bacteria of saprophytic group only. Total bacteria per cubic centimeter, 1,200. Remarks by analyst: Good water. Might be bettered by filtering!

## Chemical.

Total solid matter in solution and suspension	1.5	grains per U.S. gallon.
Hardness	1.00	degrees Clark's scale.
Equivalent to calcium carbonate		grains per U.S. gallon.
Chlorine	.25	grains per U.S. gallon.
Free ammonia	.0570	parts per million.
Albuminoid ammonia	.0679	parts per million.
Nitrogen as nitrates	.545	parts per million.
Nitrogen as nitrites		parts per million.

#### STATESVILLE.

The water-works of the town of Statesville is owned and operated by the town. Mr. Lee Parks is Superintendent. The source of supply is from a small branch fed by springs. The water-shed is mostly wooded and has no building upon it. The water is collected in a reservoir made by a small dam across the branch. The water is not filtered before being delivered to the stand-pipe and pipe distribution system.

The analyses indicate that the water should be filtered, in spite of the unusually clean character of the water-shed, though the draining off and cleaning of the reservoir would probably make very great improvement in the quality of the water, temporarily at least, and perhaps permanent. The analyses are as follows:

#### Biological.

Color, dingy; odor, pungent; reaction, alk.; temperature, 21° C.; turbidity, 0; sediment, 0; nitrite test..... Contains bacteria of putrefactive group only. Total bacteria per cubic centimeter, 1,560. Remarks by analyst: Water is dirty, with a suspicion of fœcal contamination, which may come from manured soil!

## Chemical.

Total solid matter in solution and suspension	2.7	grains per U.S. gallon.
Hardness	2.15	degrees Clark's scale.
Equivalent to calcium carbonate	1.15	grains per U.S. gallon.
Chlorine	.25	grains per U. S. gallon.
Freeammonia	.0460	parts per million.
Albuminoid ammonia	.0992	parts per million.
Nitrogen as nitrates	.175	parts per million.
Nitrogen as nitrites		parts per million.

#### TARBORO.

The water-works of the town of Tarboro is owned and operated by the town. Mr. John A. Weddell is Superintendent. The source of supply is from a number of wells ranging from 40 to 80 feet in depth located near a small branch near one edge of the town. The analyses are as follows:

## Biological.

Temperature, 15° C.; turbidity, great; sediment, sand; color, milky; odor, pungent; reaction, alkaline; gas production, 0; nitrite test,.... Contains bacteria of saprophytic group only. Total bacteria per cubic centimeter, 1,560. Remarks by analyst: Fairly good water. Seems to contain much vegetable matter.

#### Chemical.

Total solid matter in solution and suspension	7.1	grains per U. S. gallon.
Hardness	4.65	degrees Clark's scale.
Equivalent to calcium carbonate	3.65	grains per U.S. gallon.
Chlorine	.50	grains per U.S. gallon.
Free ammonia	.0754	parts per million.
Albuminoid ammonia	.0744	parts per million.
Nitrogen as nitrates		parts per million.
Nitrogen as nitrites		parts per million.

#### WADESBORO.

The analyses are as follows:

## Biological.

Temperature, 20° C.; turbidity, 0; sediment, 0; color, 0; odor, 0; reaction, neut.; gas production,....; nitrite test..... Contains bacteria of saprophytic group only. Total bacteria per cubic centimeter, 480. Remarks by analyst: Good water!

#### Chemical.

Total solid matter in solution and suspension	2.7	grains per U.S. gallon.
Hardness	1.00	degrees Clark's scale.
Equivalent to calcium carbonate	.00	grains per U.S. gallon.
Chlorine	.25	grains per U.S. gallon.
Free ammonia	.0546	parts per million.
Albuminoid ammonia	.0674	parts per million.
Nitrogen as nitrates	.425	parts per million.
Nitrogen as nitrites		parts per million.

#### WAYNESVILLE.

The analyses are as follows:

#### Biological.

Temperature, 25° C.; turbidity, 0; sediment, 0; color, dingy; odor, marshy; reaction, acid; gas production,...; nitrite test,.... Con-

tains bacteria of putrefactive group only. Total bacteria per cubic centimeter, vast numbers. Remarks by analyst: Sample contains bacillus fluorescens, liquefaceus in enormous numbers, indicating active putrefaction of organic matter. Free from sewage pollution, but not good water!

## Chemical.

Total solid matter in solution and suspension		
Equivalent to calcium carbonate	.00	grains per U. S. gallon.
Chlorine	.15	grains per U.S. gallon.
Free ammonia	.0445	parts per million.
Albuminoid ammonia	.1049	parts per million.
Nitrogen as nitrates	faint	trace parts per million.
Nitrogen as nitrites		parts per million.

#### WILSON.

The water-works of the town of Wilson is owned and operated by the town. The Superintendent is Mr. R. L. Grantham. The source of supply is Toisnot creek, which flows through a comparatively clean country, but through some swamp lands, and has a mill-pond which contains considerable decaying vegetable organic matter about a mile above the water-works intake. The chemical analysis shows an excess of organic matter in the water, which could probably be largely overcome by the removal of the mill-pond. A filtration plant would be a very beneficial adjunct to the works. The analyses are as follows:

## Biological.

Temperature, 16° C.; turbidity, 0; sediment, sand; color, dingy; odor, pungent; reaction, neut.; gas production,....; nitrite test,.... Contains bacteria of saprophytic group only. Total bacteria per cubic centimeter, 1,680. Remarks by analyst: Fair water!

#### Chemical.

Total solid matter in solution and suspension	4.3	grains per U.S. gallon.
Hardness	1.85	degrees Clark's scale.
Equivalent to calcium carbonate	.85	grains per U.S gallon.
Chlorine	.35	grains per U. S. gallon.
Free ammonia	.1328	parts per million.
Albuminoid ammonia	.2750	parts per million.
Nitrogen as nitrates		parts per million.
Nitrogen as nitrites	trace	parts per million.

# WINSTON.

The water-works of the city of Winston is owned and operated by the city. The Superintendent is Mr. Robert P. Henry, C. E. The source of supply is from a small branch, supplemented by a large shallow well. The water is filtered by a very good type of gravity mechanical filter before being pumped into the reservoir and pipe distribution system. The water-shed has some unfavorable exposures, but is guarded and protected with reasonable diligence and care. The analyses are as follows:

# Biological.

Temperature, 22° C.; turbidity, 0; sediment, 0; color, 0; odor, grassy; reaction, nent.; gas production, 0; nitrite test,.... Contains bacteria of saprophytic group only. Total bacteria per cubic centimeter, 240. Remarks by analyst: Very good water!

#### Chemical.

Total solid matter in solution and suspension	2.3	grains per U. S. gallon.
Hardness	1.00	degrees Clark's scale.
Equivalent to calcium carbonate	.00	grains per U. S. gallon.
Chlorine	.20	grains per U. S. gallon.
Free ammonia	.0731	parts per million.
Albuminoid ammonia	.0492	parts per million.
Nitrogen as nitrates	.235	parts per million.
Nitrogen as nitrites		parts per million.

## WILMINGTON.

The water-works of the city of Wilmington is owned and operated by the Clarendon Water Company. The Superintendent is Mr. William F. Robertson. The source of supply is the Cape Fear river. The water is pumped to a stand-pipe before being delivered to the pipe distribution system. The intake of the water-works is exposed to the ebb and flow of the tide, and there is constant danger of serious contamination by organic matter, some of which may be of the sewage origin. Both the chemical analysis and the biological examination indicate an excess of organic matter, and while the comparatively low chlorine given in the chemical analysis would not indicate it to be of sewage origin, the Biologist reports bacteria of the sewage group. The water-works intake, however, has very dangerous exposures and cannot be considered a safe source of water supply unless the water is treated by a very perfect and thorough system of filtration.

The water company appears to have made considerable effort towards securing its supply from deep wells and abandon the river supply, but their efforts in this line have failed. My judgment is that to secure a proper supply would require a radical change in the system and taking the water from the North Branch of the Cape Fear river at a point beyond the influence of the tide and above the drainage of the city. But understanding that the conditions are such as to make this impracticable, the most feasible plan that remains to improve the

water supply is the installation of a proper filtration plant as a part of the present works. The analyses are as follows:

# Biological.

Color, dark; odor, pungent; reaction, neutral; temperature, 15° C.; turbidity, considerable; sediment, sand; nitrite test,..... Contains bacteria of putrefactive and sewage groups! Total bacteria per cubic centimeter, 24,000, 26,000. Remarks by analyst: The water is polluted and wholly unfit to drink! This water might be rendered potable by filtration.

## Chemical.

Total solid matter in solution and suspension	4.7	grains per U. S. gallon.
Hardness	1.60	degrees Clark's scale.
Equivalent to calcium carbonate	.60	grains per U.S. gallon.
Chlorine	.45	grains per U.S. gallon.
Free ammonia	.0985	parts per million.
Albuminoid ammonia	.2117	parts per million.
Nitrogen as nitrates	.27	parts per million.
Nitrogen as nitrites		parts per million.

# SUPPLEMENTAL ANALYSES OF WATER FROM WILMINGTON.

Analytical No. 652. Sender's mark, Clarendon. Received at Department, January 6, 1903. Sample of water from a tap located in or near Wilmington. Sent by Dr. G. G. Thomas.

# Results of Physical Examination.

Temperature, 25° C.; turbidity, great; sediment. 0; color. dark; odor, grassy; reaction, neut.; gas groduction, 0.

# Results of Biological Examination.

Contains bacteria of saprophytic group only. Total bacteria per cubic centimeter, 480.

Remarks by Analyst: Results seem abnormal.

Analytical No. 679. Sender's mark, No. 11. Received at Department, February 19, 1903. Sample of water from a tap located in or near Wilmington. Sent by Dr. G. G. Thomas.

# Results of Physical Examination.

Temperature, 21° C.; turbidity, slight; sediment, 0; color, dark; odor, swampy; reaction, neut.; gas production, 0.

Results of Biological Examination.

Contains bacteria of saprophytic group only. Total bacteria per cubic centimeter, 720.

To Dr. R. H. Lewis, Secretary,

Raleigh, N. C.

# WASHINGTON.

Works recently completed, but no reports.

All the above is respectfully submitted.

J. L. Ludlow.

# WATER ANALYSES.

During the past two years the Department of Agriculture has had made for the Board of Health 186 chemical and 271 biological analyses of suspected drinking waters—most valuable work that could not have been done otherwise.

The biological analyses, showing in about 20 per cent. of the samples examined infection with the bacillus coli, have been of great help in preventing the spread of typhoid fever by thus demonstrating the dangerous character of so many wells. In addition to the water analyses, the Biologist of the Department of Agriculture has examined for us many specimens of milk, of sputum, of exudates in suspected diphtheria, and of blood in doubtful fever cases. The following is his report for the year 1902:

#### REPORT OF THE BIOLOGIST.

Dr. R. H. Lewis, Secretary State Board of Health, Raleigh, N. C.

DEAR SIR:—I herewith present a brief report of the work done in the biological laboratory of the N. C. Department of Agriculture on account of the State Board of Health during the present calendar year:

Analyses of drinking waters 20	6
Examinations of milk 7	2
Examinations of sputa 6	5
Examination of exudates 4	1
Examinations of blood	:1
Total40	_ )5

In addition, about one dozen samples were received and rejected on account of irregular or faulty sampling.

One hundred and twenty-six sampling outfits for diphtheria were sent to County Superintendents in thirteen countics, and also to each of most of these a half dozen blood sampling outfits. Very few of these outfits have been returned to the laboratory so far. It was not intended that these outfits should be retained longer than three or four months at most, since they will not remain permanently sterile, in which condition they were sent out.

A great deal of earclessness has been shown by those who send samples, and a few have been so utterly reckless as to send samples of sputum in the fragile glass tubes sent out for diphtheritic exudates.

The rules adopted by this laboratory and approved by the Board of Health are very reasonable and absolutely necessary to insure trustworthy results. Some physicians whose samples have been rejected for disregard of these rules seem to have taken offense, as if such acts were specially directed at them. I am sorry for this, but so long as the rules exist they must be enforced, and those who persist in disregarding them must expect to have their favors declined with thanks.

I am happy to be able to say that the quality of the water samples sent in this year has, upon the whole, been very much superior to those sent last year. That is to say, fewer of these were so extremely bad as they were last year, and a much greater proportion were fair to good.

In regard to future work, I make the following suggestions:

- 1. That all sampling outfits now in hands of County Superintendents be recalled.
- 2. That in future six outfits for diphtheritic samples be sent to any reputable physician doing a general practice in the State, and that reports on such samples be in all cases made by telegraph, at cost of receiver.
- 3. That only in exceptional cases shall sputum, milk or non-urgent samples be sent during the months of July, August, September and October. During these months the demand for water analyses exceeds our facilities, and all other work except as stated should be withheld.

Respectfully,

GERALD McCarthy,
Biologist.

# SEWERAGE.

EXTENSION OF SEWERS OF CENTRAL HOSPITAL FOR THE INSANE AND OF THE STATE'S PRISON.

RALEIGH, N. C., October 10, 1901.

Dr. R. H. Lewis,

Sceretary State Board of Health of North Carolina, Raleigh, N. C.

My Dear Doctor: - Chapter 657, Laws of 1901, requires the Board of Directors of the State's Prison of North Carolina and the Board of Directors of the Central Hospital for Insane to construct and extend sewers. Section 2, to which I hereby call your attention, instructs the Board of Directors, without delay, to construct and lay exclusively sewer pipes of sufficient size and capacity to carry off the sewerage matter from said Central Hospital building to some point on Walnut creek not less than 1,000 yards below the reservoirs of the Raleigh Water Company; and they are hereby authorized and directed to perform said work of constructing and laying said sewer pipes by convict labor; all such convicts as shall be necessary to perform the same to be furnished by the Board of Directors of the State's Prison of North Carolina, upon the written request of the Board of Directors of the Central Hospital for the Insane; the number of such convicts furnished and the time when they shall be so furnished to be in the reasonable discretion of the Board of Directors of the said State's Prison, but they shall not exercise such discretion to the unreasonable delay of the work aforesaid; and for the exclusive purpose of defraying the full expense of constructing and laying said sewer pipes incurred by the said Central Hospital for the Insane, the sum of twelve hundred dollars, or so much thereof as may be necessary, is hereby appropriated out of moneys in the State Treasury not otherwise appropriated.

I call your attention to this section and that chapter, to ask you to direct the sanitary engineer of your Board to meet me at this hospital for the purpose of surveying the necessary lines in which these pipes shall be laid. We really do not need it. The act is not a very consistent one in its phraseology; it means literally extravagance. The appropriation will not be sufficient, in my judgment, to carry the sewer pipes 1,000 yards below the reservoirs, as directed by the act, to be emptied into Walnut creek. I would be pleased to make an appointment with yourself, the President of the A. and M. College and the Governor of North Carolina, at any point convenient, to look into and discuss the advisability of diverting the sewerage of the A. and M. Col-

lege, which at present is being emptied into some small branches that are tributaries of Rocky branch at points above the intake of the water furnished for fire and bathing purposes of this institution.

Very truly yours,

James McKee, M. D., Superintendent.

RALEIGH, N. C., October 16, 1901.

Dr. JAMES MCKEE,

Superintendent Central Hospital for the Insune.

MY DEAR DOCTOR:—Replying to your letter in regard to the construction of sewers from your institution and the State's Prison and asking that the engineer of the Board be sent "for the purpose of surveying the necessary lines in which these pipes shall be laid," I beg to say:

In August last, at the request of the Superintendent of the State's Prison, Mr. Ludlow. the engineer of the Board, investigated the question referred to, and reported to Mr. Mann. I would therefore refer you to the latter for full information on the subject.

It will afford me pleasure to meet with you and the other gentlemen mentioned and "discuss the advisability of diverting the sewerage of the A. and M. College," etc., at any time that may suit your and their convenience.

Very truly yours,

RICHARD H. LEWIS, M. D., Secretary.

#### REPORT OF ENGINEER.

WINSTON, N. C., August 27, 1901.

HON. J. S. MANN,

Superintendent State's Prison, Raleigh, N. C.

DEAR SIR:—Complying with your request communicated to me by Dr. Lewis, Secretary, that, as Engineer of the State Board of Health, I should advise you in the matter of a sewer from the State's Prison and Central Hospital to Walnut creek, as required by a recent enactment of the Legislature, I examined the situation on the 22d instant, and herewith have the honor to submit the result of my observation.

The distance from the State's Prison to Walnut creek and the cost of building an independent sewer appears either not to have been fully understood by those who fixed the amount of the appropriation, or the condition rendering such independent sewer unnecessary for a large portion of the distance was known and taken into account. This condition is, that the city of Raleigh has in existence as a part of its sewerage system an outfall sewer extending along Rocky branch from a point

in the southwestern portion of the city to Walnut creek, to which sewer it appears entirely feasible and practicable to connect a sewer from both the State's Prison and Central Hospital, the connection to be made at some point between Cannon street and South Fayetteville street.

Having designed the sewerage system of the city of Raleigh and being familiar with the conditions, would state that the outfall sewer above mentioned was designed to be of sufficient capacity to receive the sewage from the two public institutions as well as other buildings that may in future occupy the territory drained by the Rocky branch valley, and it would appear to be an entirely useless expenditure of money to build another sewer parallel to the existing sewer from the southwestern portion of the city to Walnut creek in this valley.

By obtaining permission from the city of Raleigh to connect with its sewer, which I judge would be freely granted, since the main purpose of your proposed sewer is to improve the sanitary condition of the western portion of the city by discontinuing the emptying of the sewage directly into Rocky branch, the sewer can be built and the purpose of the legislative act accomplished with the amount of funds appropriated.

I respectfully urge that you take up the matter with the proper city officials at once to secure the permission to connect with their sewer, giving them assurance that the sewer which you propose building will be built in strict accordance with the best modern practice of sanitary sewerage.

As to the size of your sewer, I cannot definitely advise until the line is surveyed and available grades determined, but it will not exceed twelve inches in diameter.

Very respectfully yours,

(Signed) J. L. Ludlow, C. E.,

Dictated. Engineer Member State Board of Health.

(Carbon copy).

Owing to the insufficiency of the appropriation this work was not attempted.

### SEWERAGE SYSTEM, CITY OF WILMINGTON.

The Board of Aldermen of the city of Wilmington, having under consideration a proposition from the Wilmington Sewer Company to sewer the city, asked for an investigation and report from the State Board of Health. A short description of the sewage disposal proposed by the engineer of the company, explanatory correspondence and report of the Engineer of the Board of Health and of the committee are as follows:

#### DESCRIPTION OF PROPOSED SEWAGE DISPOSAL.

Sewage on east side of Sixth street in Wilmington, emptying into Burnt Mill creek, is 40 squares with 24 houses per square—960 houses. Calculating 175 gallons per capita per day and 6 persons per house, gives .1 of a cubic foot per house per minute, or 96 cubic feet per minute for 40 blocks—1.6 cubic foot per second sewage discharge. Burnt Mill creek at point of discharge is 20 feet wide, 7 feet deep, with a velocity of 3 feet per second—420 cubic feet per second.

The ratio of discharge of sewage in volume to Burnt Mill creek is therefore four thousand two hundred sixteenths—262. But as in crude sewage only 1 part in 1,000 is organic matter deleterious to health, and the balance is water, the amount of dilution, then, of the sewage is one two hundred and sixty-two thousandths for Burnt Mill creek. But this creek emptics into Smith's creek a mile from the sewer inlet, and as Smith's creek is 200 feet wide and 8 feet deep, with a velocity of 3 feet per second, the volume of discharge is 4,800 cubic feet per second, and the ratio of volume of sewage to the volume of flow is forty-eight thousand sixteenths—1 to 3,000—while the dilution is one three millionths.

On the west side of Sixth street the sewage empties on every street into Cape Fear river. Cape Fear river is 700 feet wide, 18½ feet deep, and with a velocity of 2.2 feet per second, the volume of flow is 28,560 cubic feet per second.

The sewage is from 66 squares, and under the same data the discharge is 2.64 cubic feet per second. The ratio of volume of sewage to volume of river is two million eight hundred and forty-six thousand two hundred and sixty fourths—1 to 10,818—and the ratio of dilution is 1 to 10.818,000—so small as to be unappreciable.

The sewers are calculated on a basis of 175 gallons per capita per day, running half full, and have as size of pipe 6 inches, 8 inches, 10 inches and 12 inches, with man-holes at every corner and flush-tanks at the head of each line of pipe.

WILMINGTON, N. C., April 29, 1901.

DR. R. H. LEWIS.

Raleigh, N. C.

DEAR DOCTOR:—I beg leave to submit to you a plan handed to me this morning by the parties who are contemplating building the sewerage system for Wilmington, intended to overcome the difficulties suggested by the flow of sewage into Burnt Mill creek. As I understand it, this is to work as follows: Sewage enters from the pipes at A into a basin, B, when solid matter settles. The liquid portion overflows by syphonage on a series of planes, marked C, in a thin stream; this into a bed, marked D, filled with gravel, at the bottom of which is a central gutter

in the scheme marked E. from which lateral flows backward from the course of the sewerage into basins and are emptied finally into the creek. The value of this scheme eonsists in the settling of basin, B, and the shallow overflow on the planes, marked C, as well as the gradual filtration in the gravel bed, D. Of course, as you can see, this means that the sewerage company proposes to care for the collection of matter in the pit, B, and for the periodical cleansing of the gravel in the bed marked D.

My telegram of to-day is based on the idea that Shaffer's report would be ready by Wednesday.

Yours very truly,

G. G. Thomas.

RALEIGH, N. C., April 26, 1901.

Dr. R. H. Lewis, Secretary.

Dear Sir:—I have just returned from Wilmington, N. C., where, in company with Dr. George G. Thomas, President, I visited, went over and carefully noted the water-shed of the city and the proposed lines of the sewerage system as prepared by Major Ives, civil and sanitary engineer, of Philadelphia, Pa., and now under consideration by the Board of Aldermen of Wilmington, and I understand that I am expected to express a deliberate and well considered opinion as to whether it is safe and expedient to construct and put into operation this proposed system with the intake of city water supply where it now is.

The parties interested, and especially the gentlemen submitting the plans, specifications and proposals, very properly urge an early determination of the questions relating to their offer. I think this question deserves and ought to have a fuller treatment than my physical condition to-day will enable me to bestow upon it; but in deference to the wishes of the gentlemen connected with the enterprise, I will say to-day that, after careful eonsideration of the question submitted to me, I am constrained to answer the same negatively, reserving, so far as I may, the privilege of stating the situation as I understand it, and the reasons for an opinion so disastrous to the sewerage system or to the water supply, somewhat later.

I am, very respectfully,

A. W. Shaffer, Sanitary Engineer S. B. H.

REPORT OF ENGINEER OF THE BOARD OF HEALTH.

RALEIGH, N. C., April 27, 1901.

Dr. R. H. Lewis, Secretary, etc.

DEAR SIR:—In my letter of 26th inst., containing my informal opinion respecting the question submitted, "Is it safe or expedient to construct and put into operation in Wilmington, N. C., the sewerage sys-

tem now under consideration by the Board of Aldermen, as prepared and submitted by Major Ives, civil and sanitary engineer, of Philadelphia, Pa.?" I reserved, so far as I might, the privilege of submitting in a subsequent report the reasons for an opinion adverse to such construction so long as the intake of the city water supply remains where now located. This reserved statement I herewith respectfully submit, together with a miniature map of the city from a chart of the United States Coast Survey.

Of the system submitted, considered in connection with a knowledge of the natural water-shed and drainage of the city, there seems to be no reason for criticism. Indeed, it is the only rational system that could be devised without inordinate expense. About half the area of the city, comprising perhaps a third of the population, sheds naturally to the eastward and drains northward through the Burnt Mill creek. Green's creek and Smith's creek into Northeast and thence into Cape Fear river, where it meets and mingles with the western drainage, is buffeted about by the tides and finally passes out to sea. The system is devised to conform to the natural topography of the city, and the only matter of regret is that its direction cannot be reversed so as to turn it all into the Cape Fear a couple of miles below the city without vastly increased labor and expense.

Of the detailed specifications my knowledge is superficial, derived solely from conversation and a diagram of the proposed work. I must confess that at first glance the diameter of main and lateral pipes impressed me as too small; but after passing over the ground, I found the lines of both mains and laterals short and the grade ample to conduct all the domestic sewage through a system from which all surface water is rigidly excluded. First-class underground work is provided for throughout, if correctly reported to me, and all is to be supervised and safeguarded by the city engineer. This would seem to settle the question of character of material and labor; but it is for the city to see that these are properly furnished and performed. Great promise is good, but strict performance of underground work is better. So much for the proposed sewerage system, on which there ought to be no two opinions; but here lies the parting of the ways.

On the left bank of the Northeast river, just outside the northwest angle of the city, lies the intake of the city water supply for more than 20,000 people, and past it, on its halting way to the sea, ebbs and flows all the sewage of the eastern water-shed of the city, the drainage from the two gnano factories, the *omnium gatherum* of "Garrell's butcher pen," where is reported assembled all the dead horses, mules, cows, goats, hogs, dogs, eats and other vermin commonly denied Christian burial, left to mellow in the air and sweeten in the sunlight until fitted for the caldron of the soap-boiler, the guano factory or the bone mill; and finally, so much of the western water-shed as may be carried up

stream by the incoming tide, to return by the combination of outgoing tide and current twice every twenty-four hours. All of these are irresistibly pushed over and held against the left bank by the force of the greater volume, depth and rapidity of current in the Cape Fear, where it is see-sawed up and down past the intake until it is drawn into the pipe and distributed to the city or escapes by the current down the river while the tide is off duty. How many see-saws would earry any given volume of sewage finally past the intake would depend upon the relative rapidity of current and tide—a problem akin to that of the snail in the forty-foot well that climbed three feet a day and fell back two—how many days to get out?

In point of fact, the intake of the municipal water supply may be said to be located on the central axis of the sewerage system, past which nearly every cubic foot of the city sewage is liable to flow at least once in its gravitation to the sea, and much of it must of necessity so pass two or three times. It does so now, but its volume bears no comparison to that of the system under consideration, which contemplates the drainage of 106 squares containing 1,540 houses with 9,240 people, through 6-inch, 8-inch, 10-inch and 12-inch pipes, running half full continually. How such a volume of sewage flowing lazily up and down past the intake continually can be contemplated without horror passes my understanding. If it be made possible through long sufferance of and familiarity with the same cvil in lesser degree, it might be well to consider the question from a financial standpoint. It might outweigh the possibilities of a pestilence to minds unwittingly influenced by the seductive argument of infinite dilution.

The people of Wilmington have already learned that good water and proper sewerage are expensive luxuries, which can only be successfully and economically maintained through general use and liberal rents. These only follow unbounded confidence in the proper construction of the system and the absolute purity of the water supply. An old proverb says: "A child may lead a horse to water, but legions cannot make him drink." So, too, sewers may be run to the curb and water to the gate of every home in Wilmington, but the householder cannot be made to take, use or pay for either; and without these the financial scheme must prove a dismal failure. It is even now a matter of no infrequent remark that "nobody takes water in Wilmington." And why? "Well, the color and the compound." Now, the color (a very light wine) is acquired in the juniper and cypress swamps from whence the river flows, and for drinking purposes is ranked among the best in the world. Outgoing ships, sailing or steaming around the world, take it out away above the city—as the city ought to do—and say it is the only water that will resist successfully the tropical heat throughout the long voyage. There may be a sentiment, but surely there can be no prejudice against the juniper tint of the Wilmington water as such. If any exists

it must be in the nature of a suspicion or doubt respecting its origin; but the word "compound" undoubtedly referred to sewage contamination, and the simple question arises, if a slight discoloration of city water, well known to be juniper water, or a suspicion of sewage contamination through the very small quantity of sewage passing the intake under the present limited system, can create a serious prejudice against the city water, what will it be when the waste of over fifteen hundred houses and over nine thousand people, multiplied by ebb and flow, shall have converted the contents of the city water mains—either in fact or fancy—into a bouillon de sewage?

These are the principal considerations moving me to the opinion that it would be neither safe nor expedient to construct and put in operation in Wilmington the sewerage system now under consideration by the Board of Aldermen, so long as the intake of the city water supply is where now located.

I am, very respectfully, etc.,

A. W. SHAFFER, S. E.

### REPORT OF COMMITTEE OF THE BOARD OF HEALTH.

WILMINGTON, N. C., May 3, 1901.

To the Board of Health of the City of Wilmington.

GENTLEMEN:—In compliance with your request, we have had a personal examination of the conditions involved in the sewerage plan proposed for the city made by the Engineer of the Board, whose report is hereto attached. Since that report was written, the following alternative propositions have been made by the company:

- 1. To disinfect sufficiently with chloride of lime, aerate and doubly filter through two successive filter beds all sewage from the eastern slope of the city before its discharge into Smith's creek, as per plans and specifications submitted by the company.
- 2. To turn all sewage from that slope into the Ninth street sewer emptying on the river front.

In view of the facts as we understand them, that practically all the sewage from the western slope is already emptied into the river through badly constructed private sewers, with no facilities for flushing or ventilation and liable to clog and leak, thereby dangerously threatening the wells in that district used for drinking purposes; that the increase in the amount of sewage delivered to the river incident to the installation of the proposed plant wound probably not exceed 10 per cent., which would not materially increase the present great danger of contaminating the water supply at the intake as now located, and that the proposed contract and arrangement with the city will insure first-class

Health----8

construction, maintenance and administration of the sewerage system, we see no reasonable objection to the approval by the city of Wilmington of the plans submitted by the Wilmington Sewerage Company, as modified in accordance with the suggestions made by us and accepted by the engineer of the company.

We respectfully beg leave, however, to express our disapproval of the relations between sewage disposal and water supply that have been permitted to develop in the past.

Respectfully yours,

GEORGE G. THOMAS, M. D., A. W. Shaffer, S. E.,

Committee.

#### SUPPLEMENTARY REPORT OF COMMITTEE.

WILMINGTON, N. C., May 3, 1901.

Major Chauncey Ives,

Wilmington, N. C.

DEAR SIR:—The undersigned, a committee of the Board of Health of North Carolina, respectfully insist that the following modifications shall be made to the plans you have submitted for aeration and filtration of the sewerage matter which the company you represent proposes to empty into Smith's creek, namely:

In addition to the plans submitted, there shall be a concreted water-way, of best Portland cement, sand and gravel, built at the mouth of the effluent pipe in the plans presented; said water-way to be one hundred feet long and of sufficient width to provide a maximum depth of flow not in excess of three-quarters of an inch; this water-way to empty into a gravel and sand filter similar in plan and extent to the one submitted in your plans: Provided, however, that the fall of incline of this water-way shall be such as to insure a slow movement of the fluid passing through it, and that this second gravel filter shall have the final effluent pipe conveying the sewage into Smith's creek: Provided, also, that said water-way shall always be clear of shading from trees and bushes and have full exposure to sunlight and air. And upon your agreement to incorporate these suggestions into your plans, we give our approval for the adoption of said plans for the city of Wilmington.

George Gillett Thomas, M. D., A. W. Shaffer, Eng'r.

WILMINGTON, N. C., May 6, 1901.

Dr. George G. Thomas,

President of the State Board of Health, Wilmington, N. C.

DEAR SIR:—The modification of the plans for sewerage disposal as suggested by the State Board of Health, embracing the addition of the shallow concrete trough one hundred feet in length, together with a filter bed to be attached to the end of the sewerage disposal plant, as per plans filed with you, is hereby accepted, and plans will be drawn in conformity therewith.

Respectfully, Chauncey Ives, C. E.,
For the Wilmington Sewer Company.

## LEGISLATION.

The General Assembly of 1901, at the suggestion of the Board of Health, enacted into law two bills which were presented for its consideration. One was to amend the act relating to the Board of Health in important particulars, and the other to create a State Board of Embalming, requiring all embalmers of the dead to be licensed by the said Board. A copy of the former will be found in the report of the Secretary for 1901, and the latter is given below:

AN ACT TO ESTABLISH A STATE BOARD OF EMBALMING, TO REGULATE THE PRACTICE OF EMBALMING AND THE CARE AND DISPOSITION OF THE DEAD.

The General Assembly of North Carolina do enact:

Section 1. That there is hereby established and created a board to be known as the State Board of Embalming of North Carolina. Said board shall consist of five members to be appointed by the State Board of Health, three of whom shall be members of the State Board of Health; the remaining two shall be practical embalmers, having experience in said business and the care of and disposition of dead human bodies; and all vacancies occurring on said board shall be filled by the State Board of Health.

Sec. 2. Each member shall serve for the term of three years from the date of his appointment going into effect, except those first appointed, who shall serve as follows: One for one year, one for two years, one for three years, one for four years and one for five years, respectively. The State Board of Health shall designate the number of years each shall serve, and any one having served as a member of the Board shall be eligible for re-appointment.

SEC. 3. The first board shall be appointed on or before the first day of June, nineteen hundred and one, and one member annually thereafter, who shall serve for a term of five years from the first day of July next ensuing. The State Board of Health shall have the power to remove from office any member of said board for neglect of duty, incompetency or improper conduct.

- Sec. 4. The State Board of Health shall furnish each person appointed to serve on the State Board of Embalmers a certificate of appointment. The appointee shall qualify by taking and subscribing to the usual oath of office before some person authorized to administer oaths, within ten days after said appointment has been made, which oath shall be filed with the Board of Embalmers.
- Sec. 5. The first meeting of said board shall be held on the second day of July, 1901, or as soon thereafter as may be practicable. Three members shall constitute a quorum.
- Sec. 6. There shall be elected at the first meeting a president and a secretary from the members of said board, who shall serve for one year or until their successors shall be elected and have qualified. The secretary shall furnish such bond as may be required of him by the board. The board may adopt a common seal and shall have and enjoy all the powers and privileges conferred on such board by the laws of the State. The president of said board (and in his absence a president pro tempore elected by the members present) is hereby authorized to administer oaths to witnesses testifying before said board.
- SEC. 7. The said board shall from time to time adopt rules, regulations and by-laws not inconsistent with the laws of this State or of the United States, whereby the performance of the duties of said board and the practice of embalming of dead human bodies shall be regulated.
- Sec. 8. The said board shall meet at least once in each year and as often as the proper and efficient discharge of its duties shall require.
- SEC. 9. From and after the passage of this act, every person now engaged or desiring to engage in the practice of embalming dead human bodies within the State of North Carolina shall make a written application to the State Board of Embalmers for a license, accompanying the same with a license fee of five dollars, whereupon the applicant as aforesaid shall present himself or herself before said board at a time and place to be fixed by said board, and if the board shall find upon due examination that the applicant is of good moral character, possessed of skill and knowledge of said science of embalming and the care and disposition of the dead and has a responsible knowledge of sanitation and the disinfection of bodies of deceased persons and the apartment, clothing and bedding in case of death from infectious or contagious diseases, the board shall issue to said applicant a license to practice said act of embalming and the care and disposition of the dead, and shall register such applicant as a duly licensed embalmer. Such license shall be signed by a majority of the hoard and attested by its seal. All persons receiving a license under the provisions of this act shall also register the fact at the office of the Board of Health of the city, and where there is no Board of Health, with the Clerk of the Superior Court in the county or counties in which it is proposed to

carry on said practice, and shall display said license in a conspicuous place in the office of such licentiate.

SEC. 10. Every registered embalmer who desires to continue the practice of his profession shall annually thereafter, during the time he shall continue in such practice, on such day as said board may determine, pay to the secretary of said board a fee of two dollars for the renewal of registration.

Sec. 11. All expenses, salary and per diem to members of this board shall be paid from fees received under the provisions of this act and shall in no manner be an expense to the State. All moneys received in excess of said per diem allowances and other expenses provided for shall be held by the secretary of said board as a special fund for meeting the expenses of said board.

Sec. 12. On and after the first day of January, 1902, it shall be unlawful for any person not a registered embalmer to practice or pretend to practice the art of embalming, unless said person is a registered embalmer within the meaning of this act.

Sec. 13. Nothing in this act shall apply to or in any manner interfere with the duties of any officer of local or State institutions, nor shall this act apply to any person engaged simply in the furnishing of burial receptacles for the dead and burying the dead not embalmed.

SEC. 14. Any person who shall practice or hold himself or herself as practicing the art of embalming without having complied with the provisions of this act shall be guilty of a misdemeanor, and upon conviction thereof before any court, shall be sentenced to pay a fine of not less than fifty dollars nor more than one hundred dollars for each and every offence. All fines assessed for the violation of any of the provisions of this act shall be paid into the public school fund of this State.

Sec. 15. Schools for teaching embalming shall have extended to them the same privileges as to the use of bodies for dissection while teaching as those granted in this State to medical colleges.

Sec. 16. That nothing in this act shall be construed so as to prevent any person holding a certificate from any embalmers' association from any other State from practicing the art or trade of embalmer in this State.

Sec. 17. This act shall be in force from and after its ratification.

Ratified the 4th day of March, A. D. 1901.

## OPINIONS OF ATTORNEY-GENERAL.

OPINION OF THE ACTING ATTORNEY-GENERAL IN REGARD TO COMPELLING A COUNTY TO ENFORCE NECESSARY PRECAUTIONS AGAINST SPREAD OF SMALL-POX.

RALEIGH, January 1, 1902.

Mr. S. B. Shepherd, Acting Attorney-General.

DEAR SIR:—I enclose copy of a resolution adopted by the County Sanitary Committee of Edgecombe county asking for information in the line of your department. I would thank you for an opinion on the same at your earliest convenience.

Very truly yours.

RICHARD H. LEWIS, Secretary.

#### RESOLUTION.

The report of Dr. L. L. Staton, Superintendent of Health for Edgecombe county, is read, in which it appears that small-pox is prevalent in Wilson county, that said disease has spread to Edgecombe county and that there is grave danger of general infection in Edgecombe, and that he is informed that the health authorities of Wilson county have neglected to quarantine and otherwise prevent its spread; therefore, be it

"Resolved by the County Sanitary Committee of Edgecombe County, That the above be brought to the attention of the Board of Health of the State of North Carolina and that it be requested to take such steps as may be necessary to compel said health authorities of Wilson county to afford the protection required by law by compelling said authorities to enforce the regulations as are usual."

NORTH CAROLINA-Edgecombe County.

I, H. S. Bunn, Clerk of the Sanitary Committee of said county, do hereby certify that the foregoing is a true and correct copy of an extract taken from the minutes of said committee at a meeting held December 17, 1901.

In witness whereof, I hereunto set my hand and seal, on this the 30th day of December, 1901.

II. S. BUNN,

Clerk Board Co. Commissioners and ex officio Clerk of Sanitary Committee of Edgecombe County. [COPY.]

Raleigh, January 13, 1902.

Dr. R. H. Lewis,

Secretary State Board of Health, Raleigh, N. C.

DEAR SIR:—In answer to your communication of January 1st, requesting an opinion upon the law relative to enforcement of quarantine laws, etc., especially in reference to condition in Wilson county, upon complaint of Board of Edgecombe county, I will say:

That the County Superintendent of Health seems to be chiefly under the control of the County Board, which alone has authority to remove him from office for failure to discharge certain duties imposed upon him by section 8 of the act. It is provided, however, that he is to carry out as far as possible the directions of the State Board of Health, and he is liable to the deduction of pay for failing to give notice to the Secretary of the State Board of any case of small-pox, etc., within twenty-four hours after it has come to his knowledge. In towns having no regularly organized local boards of health the State Board has full sanitary jurisdiction.

As to the complaint of the Board for Edgecombe county, the State Board may advise and also direct the County Superintendent under section 5 of the act, and give notice of any failure on his part to make the reports and perform other duties.

Very respectfully,

S. B. Shepherd, Acting for Attorney-General.

OPINION: OF ATTORNEY-GENERAL IN REGARD TO THE DUTY OF RAILROAD COMPANIES IN THE MANAGEMENT OF THEIR EMPLOYEES INFECTED WITH SMALL-POX.

LENOIR, N. C., April 3, 1902.

DR. R. H. LEWIS,

Sceretary State Board of Health, Raleigh, N. C.

DEAR DOCTOR:—I have had only the two cases of small-pox in my camp up to this time. I released all but seven yesterday. The ones released had been least exposed—two weeks since last exposure, and everything about them twice cleaned up and disinfected. If no further developments, I will release all very soon.

In the meantime I wish to understand the law applying to this case: They were all working for wages for the Atlantic Construction Company, the Atlantic Construction Company being the railroad company, but the accounts of construction being kept separate from the accounts of operating by the two names. The shanty cars in which I found them

were owned by the railroad company and on their track—that is, on the switch running from the main line to Rhedhiss cotton factory. This switch is owned by the railroad company. The negroes and the two white men were working for wages, in the employ of the construction company. None of them were citizens of Caldwell county. Small-pox broke out among them before they were sent into Caldwell county. The general manager of the railroad ordered them moved from an adjaining county to the Rhodhiss switch after he knew that small-pox had broken out among them. Although it had been among them for some time, the railroad authorities made no effort to suppress it or to keep them from mixing with the Rhodhiss population. Nor did they report the fact to the health officer anywhere. The railroad has fed the men, but at the expense of the men, as their board was taken out of wages due them. I have met all the other expenses of the quarantine. As it will end soon, I wish to know who should pay all the expenses of it. You referred me to section 8, amended law, published in February Bulletin, 1901. I have not a copy of that BULLETIN and cannot find the amended law in the acts of Legislature as published. As I see it, the Atlantie Construction Company is the "householder" and must pay the expenses of the quarantine. Further, they have violated the law by knowingly bringing into the county a crowd of men, shanty ears and effects infected with small-pox; and have again violated the law that requires the householder to report such diseases to the proper health officer when they break out. In this instance they made no report of it. The community complained, threatened and finally reported it to me. railroad has not refused to pay the expense, but in ease it does I wish to know the law, so as to know just how to proceed.

Please send me the full text of the amended law, if it has been printed; if not printed, please send me a copy of the February Bulletin of 1901.

Any other advice, etc., will be duly appreciated.

Yours sincerely,

A. A. Kent, M. D., Supt. of Health, Caldwell County.

RICHARD H. LEWIS, M. D.,

Sec. and Treas. N. C. Board of Health, Raleigh, N. C.

My Dear Sir:—I have the honor to acknowledge the receipt of your favor of recent date, with enclosure of (letter of) Dr. Kent of Lenoir, N. C., relating to the payment of the expenses incurred in maintaining quarantine on account of small-pox infection. This matter, as you are aware, is regulated by section 8, chapter 214 of the Laws of North Carolina, session 1893. In this section the following language is used: "The expense of the quarantine and of the disinfection shall be borne

by the householder in whose family the case occurs, if able; otherwise, by the city, town or county of which he is a resident."

The term "householder" signifies the occupier of a house or one who provides for the household. Whether this definition of the word is sufficient to embrace the Atlantic Construction Company or the railroad company is not entirely free from doubt.

I note that Dr. Kent says that the railroad company has not refused to pay the expenses of maintaining the quarantine, and I am inclined to the opinion that under the circumstances detailed in his letter that the company is liable.

Dr. Kent says: "The general manager of the railroad ordered them moved from the adjoining county to Rhodhiss switch after he knew that small-pox had broken out among them." And it also appears from his letter that the railroad company furnished provisions to the men, the cost of which was deducted from their wages.

This assumption of centrol on the part of the railroad company might constitute it a householder within the meaning of the statute.

I beg to suggest that Dr. Kent consult with the railroad authorities with reference to the question. It is clear that the county of Caldwell is not liable, for the persons in quarantine had neither acquired a residence nor settlement in that county.

If the railroad company cannot be held responsible under the term "householder," the resident county is responsible for the cost of maintaining the quarantine.

Very respectfully,

ROBT. D. GILMER, Attorney-General.

## TUBERCULOSIS IN CONVICTS.

STATE OF NORTH CAROLINA.

EXECUTIVE DEPARTMENT,
RALEIGH, October 12, 1901.

Dr. R. H. Lewis,

Sceretary State Board of Health, Raleigh, N. C.

DEAR SIR: - Within the last few days five or six applications for pardon have been filed with his Excellency, the Governor, asking that eertain convicts be released from the State's Prison, the county roads and jails, upon the ground that the convicts are suffering with consumption. Besides these recent cases, there are others that are now on file asking for pardon for the same reason. In addition to this, the Governor has pardoned several convicts upon the ground that they were suffering with this terrible disease. The frequency with which these applications are made causes me to address you this communication. His Excellency desires to know what effect the matter of confinement in the jails, on the chain-gang, in the penitentiary and on the penitentiary farms would have upon a person suffering with tuberculosis of the lungs. I assume that you know, generally, the condition of the North Carolina jails and quarters for working convicts on the roads, the State's Prison and the prison farms, and it is desired that your answer to this communication should be made in view of the actual conditions of our places for the retention and punishment of criminals who are thus afflicted. Also we will thank you to make any suggestions that occur to you with reference to a reasonable solution of this troublesome and perplexing proposition. Men who commit crime should be punished. While that is true, the principles of humanity with a humane Governor must and will obtain.

Very truly yours,

P. M. Pearsall, Private Sceretary.

RALEIGH, October 16, 1901.

COLONEL P. M. PEARSALL,

Private Secretary, Executive Office, Capitol, City.

My Dear Sir:—Your communication stating that "his Excellency desires to know what effect the matter of the confinement in the jails, on the chain-gang, in the penitentiary and on the penitentiary farms would have upon a person suffering with tuberculosis of the lungs," asking that my "answer to this communication be made in view of the actual conditions of our places for the retention and punishment of criminals who are thus afflicted," and that I "make any suggestions that

occur to you (me) with reference to a reasonable solution of this troublesome and perplexing proposition," is received. In reply I beg to say:

In my opinion, confinement in either of the places named, under conditions as they now exist, would be deleterious to the health of persons suffering with tuberculosis, and almost certainly hasten their decease. It would also, in all probability, as tuberculosis is a communicable disease, cause the infection with the same disease of a greater or less number of healthy convicts associated with them.

In order to carry out his Excellency's desire to meet the ends of both justice and humanity in this matter. I would suggest that special quarters be prepared on one of the State farms, and that all tuberculous convicts be confined therein and regulated with a view to their malady. If this should be done, they would not suffer from the confinement, but, on the contrary, be better off, so far as the disease is concerned, than an immense majority of them would be at their homes. If desired, I will be glad to advise the penitentiary authorities at any time in detail.

Very truly yours,

RICHARD H. LEWIS, M. D., Secretary.

# VITAL STATISTICS.

Owing to the practical impossibility of obtaining reliable statistics from the rural districts without an amount of machinery and money to run it, for which public sentiment is not yet ready, we have continued to confine our attempts to collect vital statistics to the cities and towns.

The total number of cities and towns reporting in 1901 was twenty-two, with an aggregate population of 132,900—79,700 whites and 53,250 colored. In 1902, twenty-six, with an aggregate population of 153,950—whites 92,100, colored 61,850. An analysis of the tables will show the following in relation to some of the principal diseases:

Typhoid Fever.—In 1901 the total number of deaths in population given above was 116—65 whites and 51 colored; in 1902, 128—white 69, colored 59. Applying this average to the entire State, the total number of deaths from this disease would be for the two years about 1,600 and 1,500 respectively. This, of course, is a very crude and inaccurate way of getting at it, but as typhoid fever is not notably worse in towns than in the country, it is not so unfair after all. At any rate, it is startling and suggestive.

Malarial Fever.—Notwithstanding the generally accepted statement that the black race is less susceptible to malarial diseases than the white, we find year after year that with us the contrary appears to be true. In 1901 the total number of deaths was 95—white 39, colored 56, representing a death rate among the whites of .5 per thousand, among the colored 1 per thousand. In 1902 the difference between the two races was much more marked—24 whites, 88 colored; representing a death rate for the whites of .25, as against 1.4 for the colored. In addition to the fact, pointed out in former reports, that negroes live in the comparatively insalubri-

ous sections of the towns, and that owing to their poverty they do not receive prompt and thorough treatment, we think the mixed blood of most of them should be considered. The thorough-bred pure black negro is doubtless less susceptible to malaria than the white man, but such negroes are comparatively rare in our urban population. This, according to the theory of Dr. King that only those whose skins are so deeply pigmented as to prevent the passage of light are immune, may be the explanation of our figures.

Diphtheria.—According to our reports for many years the negro seemed to be almost immune to diphtheria, but in the past two years this apparent lack of susceptibility has not been so pronounced, although the number of deaths from this disease remains proportionately much less among the negroes than among the whites.

Pneumonia comes next in fatality to diarrhœal diseases, which are a trifle behind consumption. In 1901 the total number of deaths from pneumonia was 241—white 122, colored 119, representing respectively a death rate per thousand of population of 1.5 and 2.2. In 1902, total 272—white 123, colored 149, or 1.3 and 2.4 per thousand.

Consumption continues our most fatal disease. The total number of deaths in 1901 was 289—white 116, colored 173, or 1.5 and 3.25 per thousand respectively. In 1902, 394—white 173, colored 221, or 1.9 and 3.6 per thousand, the proportion between the two races remaining much the same as heretofore.

Suicide.—The negro is generally much less given to taking his own life than the white man, yet in 1901, although the colored population of the State is only one-third of the whole, the total number of colored suicides was 3, as against only 2 among double the number of whites. In 1902, however, the figures were 11 whites and 2 colored.

The general prevalence of some of the more prominent acute diseases throughout the State, as shown by the average

number of counties reporting them, shows, in comparing the two years of 1901 and 1902, the following, respectively: Diphtheria, 10.2, 11.3; influenza, 17.1, 10.2; malarial fever, 22.2, 18.5; pneumonia, 11.5, 10.6, and small-pox, 16, 20. From this it appears that while diphtheria was slightly and small-pox decidedly more prevalent, the other diseases named, particularly influenza and malarial fever, were less so.

For further details the reader is referred to the tables.

TABLE I—Showing the Comparative Prevalence of Certain Diseases in the Three Physical Divisions of the State During 1901 and 1902.

Eastern Division (E)—Alluvial Plain. Central Division (C)—Hilly. Western Division (W)—Mountainous. The figures under the various diseases represent in percentage the proportion of the counties reporting the presence of the disease in question to the whole number of counties sending reports for the month.

Month.	Physical Division.	Year.	Whole Number Counties.	No. Counties Reporting.	Diphtheria.	Diarrhœal Diseases.	Influenza.	Malarial Fever.	Malarial Fever, Pernicious.	Malarial Fever, Hemorrhagie,	Pneumonia.	Scarlatina.	Typhoid Fever.	Small-pox.
	E.	1901 1902	36	30 29	0.0 17.2	0.0	63.3 34.5	$\frac{20.0}{20.7}$	0.0	13.3 20.7	43.3 24.1	0.0 3.4	36.7 10.3	20.0 31.0
January.	C.	1901 1902	27	24 27	16.7 14.8	0.0	62.5 40.7	0.0	0.0	0.0	37.5 59.3	12.5 22.2	50.0 33.3	20.8 18.5
Ja	w.	$\frac{1901}{1902}$	34	30 29	26.7 24.1	0.0	36.7 31.0	0.0 3.4	0.0 3.4	0.0	30.0 31.0	13.3 34.5	33.3 20.7	16.7 34.5
	E.	1901 1902	36	31 32	3.2 9.4	0.0	87.1 43.7	9.7 3.1	0.0 3.1	6.4 3.1	35.5	12.9 6.2	32.3 25.0	25.8 28.1
February.	C.	1901 1902	27	25 24	12.0 4.2	0.0	84.0 50.0	4.0 4.2	0.0	0.0	52.0 50.0	8.0 12.5	32.0 50.0	40.0 16.7
Fe	w.	1901 1902	34	31 32	9.7 3.1	0.0	54.8 25.8	3.2 3.1	3.2 3.1	0.0 0.0	32.3 34.4	16.1 12.5	22.6 21.9	22.6 37.5
	E.	1901 1902	36	32 33	6.2 15.1	0.0	62.5 30.3	6.2 12.1	0.0	0.0 6.1	50.0 24.2	9.4 0.0	15.6 21.2	15.6 18.2
March.	C.	1901 1902	27	25 26	4.0 11.5	0.0	60.0 23.1	4.0 3.8	0.0	0.0 0.0	24.0 30.8	12.0 7.7	12.0 30.8	32.0 30.8
	w.	1901 1902	34	32 33	6.2 6.1	0.0	46.8 18.2	0.0	0.0	0.0	25.8 21.2	12.5 15.1	6.2 18.2	15.6 42.4
	E.	1901 1902	36	31 32	0.0 9.4	3.2 9.4	16.1 15.6	19.4 40.6	0.0 6.2	6.4 12.5	16.1 21.9	6.4 3.1	6.4 15.6	12.9 12.5
April.	C.	$\frac{1901}{1902}$	27	24 25	8.3 0.0	8.3 0.0	25.0 16.0	12.5 20.0	0.0	0.0 4.0	25.0 28.0	12.5 4.0	29.2 40.0	50.0 20.0
	w.	1901 1902	34	34 30	$\frac{5.9}{6.7}$	0.0 6.7	35.3 6.7	5.9 0.0	0.0	2.9 0.0	17.6 13.3	5.9 13.3	17.6 13.3	14.7 43.3
	E.	1901 1902	36	32 33	0.0 3.0	53.1 60.6	3.1 0.0	31.2 33.3	3.1 3.0	6.2	0.0	3.1 0.0	34.4 30.3	9.4 15.1
May.	C.	1901 1902	27	27 25	$\substack{11.1\\0.0}$	51.8 52.0	0.0	22.2 8.0	0.0	0.0 4.0	7.4 0.0	7.4 4.0	48.1 40.0	40.7 20.0
	w.	1901 1902	34	32 31	$\substack{12.5\\0.0}$	59.4 22.6	0.0	0.0	0.0	0.0	6.2	12.5 9.7	34.4 29.0	21.9 29.0
	E.	1901 1902	36	32 34	3.1 0.0	46.8 47.1	0.0	50.0 47.1	12.5 5.9	6.2 11.8	0.0	3.1 8.8	59.4 67.6	3.1 11.8
June.	c.	1901 1902	27	27 24	$0.0 \\ 4.2$	44.4 37.5	3.7 0.0	29.6 25.0	0.0	0.0	0.0	7.4 4.2	66.7 66.7	37.0 4.2
	w.	1901 1902	34	32 29	6.2 7.0	46.8 51.7	0.0	12.5 0.0	0.0	0.0	0.0 3.4	12.5 17.2	62.5 55.2	21.9 24.1
July.	Е.	1901 1902	36	32 35	6.2	15.6 14.3	0.0	59.4 60.0	12.5 8.6	9.4 14.3	3.1 0.0	3.1 2.9	84.4 77.1	0.0 5.7

TABLE I-Continued.

Month.	Physical Division.	Year.	Whole Number Counties.	No. Counties Reporting.	Diphtheria.	Diarrhœal Discases.	Influenza.	Malarial Fever.	Malarial Fever, Pernicious.	Malarial Fever. Hemorrhagic.	Pneumonia.	Scarlatina.	Typhoid Fever.	Small-pox.
ż	C.	1901 1902	27	27 26	$0.0 \\ 0.0$	18.5 15.4	0.0	33.3 30.8	3.7 0.0	0.0	0.0	$\frac{11.1}{23.1}$	$92.6 \\ 92.3$	25.9 3.8
July.	w.	1901 1902	34	32 29	$\frac{6.2}{7.0}$	28.1 20.7	$\begin{smallmatrix}0.0\\0.0\end{smallmatrix}$	$\frac{25.8}{3.4}$	0.0	4.0 0.0	$\frac{4.0}{3.4}$	12.5 17.2	81.2 82.8	18.7 24.1
	E.	1901 1902	36	32 32	6.2 3.1	9.4 6.2	0.0	78.1 59.4	6.2 12.5	12.5 15.6	0.0 0.0	12.5 0.0	75.0 81.2	3.1 15.6
August.	C.	1901 1902	27	27 27	7.4 11.1	11.1 3.7	0.0	55.5 37.0	14.8 3.7	0.0	0.0	29.6 22.2	77.8 81.5	14.8 14.8
A	w.	1901 1902	34	32 33	$\substack{15.6 \\ 24.2}$	3.1 6.1	0.0 0.0	15.6 3.0	0.0	0.0	0.0 0.0	31.2 42.4	84.4 90.9	12.5 21.2
er.	E.	1901 1902	36	32 33	9.4 24.2	6.2 3.0	0.0 3.0	81.2 54.5	15.6 6.1	18.7 15.1	0.0	12.5 12.1	49.4 69.7	3.1 9.1
September.	C.	1901 1902	27	26 24	26.9 12.5	3.8 0.0	0.0 4.2	53.8 41.7	3.8 4.2	3.8 4.2	0.0	42.3 29.2	73.1 83.3	15.4 25.0
Sei	w.	1901 1902	34	33 32	21.2 40.6	3.0	0.0 3.1	12.1 6.2	0.0 0.0	3.0 0.0	0.0 6.2	48.5 49.4	81.8 87.5	9.1 24.2
	E.	1901 1902	36	31 35	12.9 25.7	0.0 2.9	0.0	80.6 62.8	12.9 5.7	25.8 31.4	0.0	12.9 11.4	67.7 80.0	9.1 11.4
October.	C.	1901 1902	27	25 22	$\frac{32.0}{27.3}$	0.0	8.0 4.5	40.0 36.4	4.0 9.1	4.0	0.0 13.6	52.0 31.8	80.0 86.4	12.0 18.2
Ō	w.	1901 1902	34	33 29	21.2 34.5	0.0	0.0	9.1 0.0	0.0 0.0	0.0	6.1 3.4	60.6 37.9	66.7 79.3	9.1 37.9
er.	E.	1901 1902	36	32 34	21.9 20.6	0.0 5.9	9.4 5.9	46.8 38.2	9.4 14.7	31.2 14.7	9.4 14.7	12.5 5.9	37.5 70.6	12.5 8.8
November.	C.	1901 1902	27	24 26	20.8 15.4	0.0	12.5 7.7	33.3 23.1	4.2 7.7	0.0	8.3 7.7	33.3 34.6	58.3 88.5	8.3 19.2
ž	w.	1901 1902	34	33 33	30.3 27.6	0.0	3.0 0.0	0.0 6.1	0.0 3.0	0.0	9.1 6.1	42.4 18.2	60.6 69.7	18.2 42.4
er.	E.	1901 1902	36	33 33	12.1 15.1	0.0 3.0	18.2 15.1	27.6 24.2	6.1 9.1	12.1 12.1	9.1 6.1	9.1 12.1	27.6 54.5	21.2 9.1
December.	C.	1901 1902	27	23 25	$\frac{26.1}{4.0}$	0.0	13.0 28.0	8.7 16.0	4.3 8.0	0.0 4.0	13.0 24.0	43.5 16.0	47.8 56.0	17.4 24.0
Ω	w.	1901 1902	34	31 32	$\frac{12.9}{21.9}$	0.0	9.7 15.6	0.0 3.1	0.0	0.0	16.1 9.4	45.2 15.6	35.5 56.2	32.3 56.2
r the	1901	E. C. W.	36 27 34	31.7 25.3 32.2	6.8 12.1 16.9	11.1 11.5 11.7	21.6 22.7 15.5	42.5 24.7 7.0	6.5 2.9 0.3	12.3 0.6 0.8	13.9 13.9 12.3	8.1 22.7 26.9	43.9 55.6 48.9	11.3 26.2 15.3
Average for the Year.	1902	E. C. W.	36 27 34	32.8 25.0 32.0	11.9 9.5 16.9	11.9 9.0 9.0	12.3 14.5 8.4	39.7 20.5 2.3	6.5 2.7 0.8	13.1 1.7 0.0	11.0 17.8 11.0	7.7 17.6 23.6	50.3 62.4 52.1	14.7 17.9 34.7
Ave	1901 1902	State. State.	97 97	88.2 89.8	11.9 12.8	11.4 10.0	19.9 11.7	24.4 10.8	3.2 3.3	4.6	13.7 13.3	19.2 16.3	49.5 54.9	17.6 22.4

TABLE II—Showing the Comparative Prevalence of Disease During THE YEARS 1901 AND 1902.

				RESI	ENC	E O	IES F E ION	ACI	d D			
DISEASE.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Number of counties that sent in reports § 1901 (97 counties in the State) 1 1902	83 88	8 <b>7</b> 88	89 91	89 86	91 89	91 87	91 90	91 92	91 88	89 8 <b>6</b>	89 93	8'
Cholera (chicken)		$\frac{1}{2}$		2 3	1	1 1		2		2	2	2
Cholera (hog)	6 4	7 5	6 2	4 1	4 3	7	10 1	8	10 4	8	13	
Diarrhœal diseases 1901				3 5	50 40	43 40	19 15	7 5	4	1	2	
Diphtheria	12 16	7 5	5 10	4 5	7	3	4 2	9 12	17 24	19 25	22 20	14
Distemper (horses)	2	1	4	4	4						2	
Influenza	45 31	65 34	50 22	23 11	1	1				2	7 4	12
Malarial fever	6 7	5	3 5	11 18	16 13	27 22	36 30	46 30	44 31	38	23 20	11
Malarial fever, hemorrhagic 1901	4	2	2	3	$\frac{2}{1}$	2 4	4 5	4 5	8	9 12	10	4
Malarial fever, pernicious		1 2	1	2	1	4 2	5 3	6	6	5 4	4 8	6,000
Measles	34 23	40 17	51 28	39 27	41 28	27 21	20 11	8 13	9	8	5	8
Mumps	4	3 6	4 11	7 10	6	1 3	4	1 2	 5	1	1 5	60
Pneumonia	30 22	34 36	30 24	17 18	4	i	2		2	2 4	8	11
Rabies (dogs)		1	1	1		ا		1	 1	1		
Rotheln								1			!	
Scarlatina   1901   1902	7 17	11 9	10	7	7	7 9	8 12	22 20	32 30	37 22	26 17	27
Small-pox. 9 1901 1 1902	16 24	25 24	18 28	21 22	20, 19	18 12	13 10	12 16	8 17	9	12 22	21
Staggers (horses)	 5	4		2	1	2	1	8	2	2	3	6
Γyphoid fever	33 18	25 27	11 21	15 19	35 29	57 55	77 75	72 78	65 72	63 70	49 70	31 50
Varicella	1 3	2	3	3 2	1	1	1			1	2	4
Whooping-cough	24 24	34	27 22	32 23	36 22	27 25	30 25	17 25	24 17	22 17	16 13	14

TABLE III-TABLE OF MORTALITY REPORTS FOR YEAR ENDING DECEMBER 31, 1901.

N.	By Towns.	14,800	18,200	13.000	4,800	6,000	10,000	3,800	1,500	1,500	1,150
POPULA- TION.	By Races.	10,000 14,800	11,000 18,200 7,200 18,200	$\frac{8,000}{5,000}$ 13.000	$\frac{2.500}{2,300}$	$\frac{3,400}{2,600}$	6.000 10,000	$\frac{2,300}{1,500}$	006	1,200	350
RATE FOR YEAR.	By Towns.	17.4 21.4 28.8	$\begin{array}{c} 12.014.016.817.018.025.018.020.413.16.514.213.116.121.0\\ 31.227.530.823.637.737.466.933.316.721.725.021.728.521.0 \end{array}$	18.3	16.9	20.5	20.4	$\begin{array}{c} 35.211.217.611.729.317.117.15.24.85.210.45.213.017.1\\ 28.214.121.214.121.214.135.342.328.224.08.08.023.38.023.317.1\\ \end{array}$	11.3	12.7	13.9
Y. Y.	By Races.	17.4	16.1	13.2	11.6	18.5 25.0	33.2	23.3	7.8	11.7	17.5 5.7
rhs.	December.	22.5	213.1	6.0	3 22.3	3 13.8	8.0	8.0	13.3	0.00	0.0
Months.	November.	2 20.	514.	8 12.	6 14. 8 31.	8 17. 5 32.	0 14.	2 10.	0.0	0 10.0	0 15.0
BY	September. October.	0.25	7.21.	.8 10. .8 16.	9 20	2 38	.0 14. .0 24.	8.0	7 0.	0.00	0.0
DEATH-RATE (ANNUAL) PER 1,000,	August.	$12.417.222.318.614.921.021.018.012.025.220.4 \ 9.6 \\ 31.240.824.038.414.438.421.645.027.527.517.522.5$	3.3 16	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} 14.217.217.87.117.89.621.224.721.238.817.417.618.520.5\\ 9.638.419.228.49.818.848.018.532.318.532.318.825.020.5 \end{array}$	$\begin{array}{c} 12.014.0 \\ 8.012.024.0 \\ 8.012.024.0 \\ 8.012.024.0 \\ 8.011.8 \\ 8.20.4 \end{array}$	1.0 8	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
PER	July.	1.018	-0.8 -0.9 -0.85	-2.6 -2.8 -2.8	4.22	8.018	0.0	7.1	0.046	0.020	0.0
JAL)	June.	21.02	25.01 37.46	$\frac{10.8}{31.2}$	25.24	9.62	12.02	17.11	0.0	0.01	51.43
ANN	May.	14.9 14.4	18.0 37.7	5.4	31.8	9.8	10.0 36.0	29.3	24.0	10.0	0.0
TE (	April.	38.4	323.6	19.0	0.0	28.4	12.0	14.1	14.4	0.0	0.0
H-RA	March.	8 24.0	0 16.8	9 5.7	3 15.6	4 19.2	0.8.0	1,21.2	0.0	0.00	3 78.3
DEAT	January. February.	2 40.	0 14.	26.826.8 5.420.9	2 25.	638.	0 14.	2 14.	0.00	10.0 20.0 10.0 0.0 0.0 0.0	0 31.
-	Grand Total.	317 12.	382 12	174 <sup>26</sup>	81 13	123 14.	204 12	65 28.	17 0.	19 10.	16 0.
	Total by Races. Grand	174 143	205 33	88 1. 86 1.	52	63 15	133 22	88	10	14	2 14
DEATHS BY MONTHS1901	December.			11.5	01.4	20 00	4 ×		10	10	00
THS	October. November.	1014 18 15 12 17 17 15 10 21 17 8 13 17 10 16 6 16 9 18 11 11 7 9	12 14 15 15 18 25 18 17 12 6 13 12 16 14 19 13 19 19 34 20 10 13 15 13	9 8 5 7 5 11	214 80	$\begin{smallmatrix}6&11&5\\7&4&7\end{smallmatrix}$	7 8	11 3 12	0 0	0 0 0	0 0
Mon	August. September.	8 210	7 12 20 10	$\begin{smallmatrix} 1 & 3 & 916 & 6 & 9 \\ 2 & 113171212 \end{smallmatrix}$	5 4	7 4 6	6 5 6 10 4 5 8 12 14 19 17 18	31	0.0	22	0 1 2 0
ВУ	July.	91	181	16	41-	901	191	€ 4	0		010
HS	May. June,	2 17 6 16	9 25	3 9	44	10 01	2 14	6.3	0 0 0 0 0	1 0 1	000
SAT	April.	151	151	12 11	0 0	0.00		2121		00	00
ā	March.	189	113	211	4 3 1	10 00 10 44	4 6 9	0101	00	2 0 0	2000
	January. February.	31	617	10 10	44	40	9 %	04	-01	0 0	000
	RACES.	≽ંડ	≽ັບ	≽່ວ.	.ა.		કું.	≽່ວ.		Š.Ö.	≥.0
	TOWNS AND REPORTERS.	sheville	harlotte	Durham	avetteville Dr. Jno. D. McRae.	Geo. E. Hood, Mayor.	Greensboro Jno. S. Michaux, City Clerk.	Harris,	urinburg	Kent.	1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
	Tow	Asheville Dr. C. V. Reyr	Charlotte Dr. F. O. Hawley.	*Durham.	Fayetteville Dr. Jno. D	Goldsboro. Geo. E. I	Greensbor Jno. S. N	Henderson Dr. F. R. Harris.	Laurinburg Dr. A. W. Hamer	Lenoir. Dr. A. A. Kent.	Marion Dr. B. A. Cheek

TABLE III—Continued.

DEATHS BY MONTHS-1901.
Auly. August. September. Movember. December. Total by Races.
00
$\begin{smallmatrix}0&3&1&0&1&0&15\\2&1&0&1&1&4&14\end{smallmatrix}$
7 15 14 11 15 22 9 10 10 16 11 12 152 19 21 15 4 13 13 17 10 12 14 13 16 167
4 3 2 1 3 2 30 5 3 2 1 3 2 31
6 5 5 2 1 0 0 34 5 0 2 0 1 0 0 19
2 3 0 2 3 3 24 0 0 1 1 0 1 14
11 6 3 1 5 3 0 45 0 1 0 1 0 1 1 8
7 6 5 3 5 6 50 4 3 2 1 5 2 40
$\begin{smallmatrix} 0 & 0 & 1 & 2 & 1 & 0 & 10 \\ 0 & 0 & 1 & 2 & 0 & 0 & 7 \\ \end{smallmatrix}$
3 4 5 3 7 4 43 9 8 7 9 4 1 65

TABLE III-Continued.

			DEATHS BY MONTHS-1901.	AT	SH	BY	Mo	E	HS.	-13(	1.		DE	SATH	-RAT	В (A	NNI	JAL)	PER	1,000	DEATH-RATE (ANNUAL) PER 1,000, BY MONTHS.	Mon	THS.		RATE FOR YEAR.	P.	FUL/	اد
TOWNS AND REPORTERS.	KACES.	January.	March.	April.	May.	July.	.isuguA	September. October.	Movember.	December.	Total by Races.	Grand Total.	January.	February.	March.	.firqA	May.	June.	July.	August.	September.	October.	Тэсталом	December.	By Races.	By Races.		RA TOMUS.
Weldon J. T. Gooch, Mayor.	1 .	0 0 1 0 0 1 2 1	100	0 1	20	100	10	0 0 3	00		13.7	8	00	0 0 0 0 0 16.7	32.7	0.0	9.23	34.3	0.0	0.0	$\begin{array}{c} 0.0  0.0  0.77.1  0.0  0.031.3  0.0  0.0  0.051.4  0.017.1  10.0  13.8 \\ 0.0  0.0  16.7  23.7  16.9  48.0  16.0  16.0  0.0  0.0  16.0  17.3  13.8 \\ \end{array}$	1.4 0	.0 17 .0 16	.1 10. .0 17.	0 3 13.	oc	58	450
Wilmington Dr. Chas, T. Harper.	≱:೮	W. 12 19 23 10 15 13 25 12 20 19 21 13 C. 26 23 20 26 34 28 36 34 40 36 37 27	88	10 1	72 TS	3 25	12 £	20 36 10 36	3 37	13 27	367	566	28.	4 22.8 4 25.1	21.8	328.4	18.0	15.6	30.0	13.6 38.8	22.62 15.74]	1.523	.330	.7 19. .8 34.	$^{0}_{9}$ 27.	$669\ 28.4\ 25.1\ 21.8\ 28.4\ 27.1\ 21.0\ 18.0\ 530.3\ 38.8\ 45.7\ 41.1\ 42.8\ 390.8\ 34.9\ 27.0\ 10.500\ 21.100$	00 21	100
Wilson Dr. W. S. Anderson.	≽.ი.	C. 5 2	25	0170	901	7.2	C1 -#	010	7 2 4	eo 10	54.2	10.	35.	133.0	26.5	335.3	33.	1 49.4	41.9	13.0 28.2	13.0 E	3.044	.9 19	2.2 36.24	မ်းက် ဗိ	$\frac{13.133.026.313.239.419.544.913.013.013.044.919.521.390.1}{15.700}3.55010733.114.135.336.314.149.449.428.263.549.428.235.236.5336.711.700}$	800 00 8	13

\*After May the city limits of Durham were extended and the population increased from 6,679 to 13,000.

TABLE IV-TABLE OF MORTALITY REPORTS FOR YEAR ENDING DECEMBER 31, 1902.

			P	DEATHS BY MONTHS,	TH	SO I	1 2	Mo	E	I.S.	1902.	20			EAT	н В.	ATE	(A)	NN	IAL)	PER	1,00	90, B	Y Mc	DEATH RATE (ANNUAL) PER 1,000, BY MONTHS.	S.	RATE FOR YEAR.	RATE FOR YEAR.	Por	POPULA- TION.
TOWNS AND REPORTERS.	RACES.	January. February.		.lirqA	May.	June,		August. September.	October.	November.	December.	Total by Races,	Grand Total.	January.	February.	March.	April.		May.	June.	July.	August.	September.	October.	November.	December.	By Races.	By Towns.	By Races.	By Towns.
Asheville Dr. C. V. Reynolds.	)કંડ	12 11 28 18 8 17 20 18 13 18 20 18 11 15 13 8 14 6 7 8 10 13 6 14	128	1 8 8	1 8 7	172	201	8 1 8	318	20	181	201 125	326	3 27.5	13.2	883	5 20.	6.9	62	5.0	24.0	20.0	15.6 25.0	21.6	$\frac{13.233.621.69620.424.021.615.621.621.624.021.6}{37.532.520.035.015.017.520.025.032.515.035.0}$	21.6	$\frac{20.1}{26.0}$ $\frac{22.0}{26.0}$	22.0	10.000 14.800	14.80
Charlotte Dr. F. O. Hawley.	გ:ე	9 11	91111142218191424121913	13	223	24	92	42	117	113	10	176 186	362	2 14.5	7.6	3 16.	4 14. 3 23.	2 25 6 36	122	30.0	9.8	22.9	12.0	$\frac{18.5}{20.0}$	31.7	10.9	$\frac{16.0}{25.8}$	6.61	$14.2 \ \ 7.616.4 \ 14.2 \ 25.1 \ 26.2 \ \ 9.8 \ 22.912.018.5 \ 14.2 \ \ 10.9 \ \ 16.9 \ \ 10.90 \ \ 18.200 \ \ 18.3 \ \ 18.3 \ \ 23.6 \ \ 36.7 \ \ 30.0 \ \ 31.7 \ \ \ 21.7 \ \ 21.7 \ \ \ 25.8 \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \$	18,20
Durham Dr. N. M. Johnson.	≽.o.	ဖြစ်	9 10 14 14 7 9 11 10	0 14 14 9 11 10	14		111	7 11	9 12	9 11 17 19 12 7 7 8 15 17 15 15 14 11	17	135 140	275		2 13.5	321.6	0 21. 5 26.	0.21 4.28	.81	9.5	16.5	25.5	28.5 36.0	18.0 36.0	7.213.515.021.021.013.516.525.528.518.010.515.0 $19.216.821.626.428.819.236.040.836.036.033.626.4$	15.0 26.4	$\frac{16.9}{28.0}$ 21.1	21.1		8,000 5,000 13,000
Fayetteville	≽::	0.10	0 0	014	0.9	0110	ಬ 4	0100	01 to	0101	00 01	23	99		3.0.0	) 14.	8 20.	931	.32	9.6	14.4	9.6	$\frac{9.6}{15.6}$	9.6	9.6	14.4	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	13.7	2,500	4,800
Goldsboro Geo. E. Hood, Mayor.	.:	40	96	9 1	∞ ∞	5 10 4 6	010	r- 00	0.03	നാ	2.9	68	133		3.13.8	332.	3 41.	5 28	.91	8.5	34.3	38.4	10.3 23.1	10.3 27.7	17.1	24.0 27.7	$14.110.631.8 \ 3.528.2 \ 17.134.324.0 \ 10.310.317.124.0 \ 18.621.8 \ 13.813.832.3 \ 41.636.9 \ 18.527.7 \ 38.423.127.7 \ 13.827.7 \ 26.1 \ 21.8 \ 18.827.7 \ 20.1 \ 21.8 \ 21.$	21.8	3,500	6,100
Greensboro John S. Michaux, City Clerk.	ა.	7 5 4 10 3 12 5 8 2 1 12 11 17 10 15 27 25 13 18 18	117	10	15	12 27 5	. S	∞ m	8 18	m 0	9 15	150	253	3 35.1	0.10.0	2 51.	9 19.	7 5	0.9	9.0.1	9.8	39.0	3.9 54.0	2.0	27.2	3.9	$\begin{array}{c} 14.010.0 & 7.919.7 & 5.923.6 & 9.815.7 & 3.9 & 2.0 & 5.9 & 3.9 & 10.3 & 25.0 \\ 35.132.251.030.045.081.075.039.054.054.027.245.0 & 47.5 & 5.0 \\ \end{array}$	25.0	$\begin{smallmatrix}6.100\\4.000\end{smallmatrix}$	10,100
Henderson	.:	1 9	1 1 0 2	0 00	0.01	.0 61	-10	4.	4.0			88	09	3 48.0	2 5.5	5.5	2 0. 0 21.	0 51 2 20	1.43	34.3	5.7	7.1	5.2 5.2 0.051.434.3 5.722.8 5.722.8 0.016.021.220.014.135.3 7.114.135.3	35.8	5.7	7.1	5.7 14.3 7.1 17.6	15.8	$\frac{2.100}{1,700}$	3,800
Laurinburg	გ:ე	0 1	0 0	0 0	0101	00	0 1	00	40	1 2 2	co —	11	27	20.0	0.0	0.0	0.0	0 30	0.0	0.0	0.0	0.0	53.3 60.0	13.3 80.0	13.3	20.0	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	18.0	009	1,500
Lenoir Dr. A. A. Kent.	≽::	0	2 0 0	610	00	0.1	00	70	0 0	00	0	× 0		8 0.0	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	0.10	0.20.	0 0	0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0 0.0	0.0	5.3	1.200	1,500
Lexington J. H. Moyer, Mayor.	≱ં:	010	1 1 0 0	0.0	10	40	000	00	0 0	0 0	0	13	15		$\begin{array}{cccccccccccccccccccccccccccccccccccc$	15.	0.30.	0 15	0.0	0.00	0.0	0.0	0.0	0.0	15.0	15.0	$  \begin{array}{ccccccccccccccccccccccccccccccccccc$	11.5	200	1,300
Marion Dr. B. A. Cheek.		0 1	0 2 0	0.0	0.1	10	0.0	00	20	0.0	77	11	16	3 15.0	0.0	0.030.0	0.0	0 34	0.01	0.0	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	0.0	0.0	30.0	30.0	$\frac{15.0}{20.0}$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	13.3	800	1,200

TABLE IV—Continued.

-
RACES, January, February, March, May, June, June,
W. 1 1 1 2 1 2 2 C. 1 1 1 0 0 2 0
W. 1 0 2 1 0 2 3 C. 0 5 2 1 4 2 2
W. 181013 817131411 10131611 C. 9 9121418181414131910 8
W. 1534283 C. 2441261
W. 1 1 0 0 0 2 2 C. 2 0 0 0 0 1 0
W. 9055545 C. 0101011
W. 68557108 C. 3333515
W. 1 0 1 2 1 1 2 C. 0 2 1 0 2 1 0
W. 0 1 0 0 0 0 1 C. 0 0 1 1 1 0 0
W. 0 0 1 0 0 0 2 C. 0 0 0 1 0 1 2
W. 3 0 2 3 314 7 C. 2 3 3 5 4 5 3

TABLE IV—Continued.

			Α	EA	TH	S	N	Top	T.H.	S.	<b>DEATHS BY MONTHS, 1902.</b>				DEA	THS	₹	NNC	(AL)	PER	1.00	Э0, в	r Mc	DEATHS (ANNUAL) PER 1,000, BY MONTHS.	vi		RATE FOR YEAR.	Po	POPULA- TION.
Towns and Reporters.	RACES.	January.	March.	lingA	May.	June.	July. August.	September.	October.	November.	December. Total by	Races. Grand	Total.	January.	February.	March.	·lirqA		May.	June,	July.	rangny.	September.	October.	November, December,		By Races.	By Races.	By Towns.
Waynesville Dr. Thos. Stringfield, Mayor.	કું ડ	00	00		0 00	000	0 1 1	0 1	1-0	3 1 1 1 1 0 0 0 0 0 0 0	00	13	12	0.04	18.0	0.0	12.0	98.0	98.0	0.012	0.0	2.015	0.0	0 12	$\begin{array}{c} 0.048.036.012.036.036.036.012.012.012.012.012.012.012.00.00$	0.0	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	1,000	0 1,300
Weldon J. T. Gooch, Mayor.	. ი.	00	2 0 2	0 -	00	0101	0 0 0		H 63	10	. co c1	. ES	33	0.03	0.0	0.0	0.0	0 17.	134	.3 0	.04	3.0 1E	.117	.1 17	.151	.4 12 .0 28	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	~ × ×	0 1,500
Wilmington Dr. Chas. T. Harper.	Š.	W. 13 14 15 13 26 20 24 14 16 19 22 19 C. 19 19 17 18 41 39 42 28 40 41 32 31	4 15	18	41	39.4	2 2 2 2	# 16 3 40	19	32 3	0.12	215 367 5	82 1	4.71	8.97	18.0	15.6	631. 544.	7 42	.0 29	.81	3.819	.222	. 8 26 0 34	.933	.8 21 .8 33	527.	552  14.716.818.015.631.224.029.816.819.222.826.422.821.527.610.00021,000	00 21,0
Wilson. S Anderson.	×. ×. ×. ×. ×.	10.10	5. 0. 1.4	വധ	9 e	96	6 4 9 15	3 13	စ စ	6 4 5 6 4 2 9 12 13 6 14 3		55 1	44	5.34	22.4	7.0	35.5	3 42.	4 38	.5 60	.0.2	1.0 1	8.818	.0 12	6 6	.0 29	5 21.	$144 \\ 35.342.3 \\ 7.035.342.3 \\ 82.423.423.930.021.015.818.012.6 \\ 6.314.521.2 \\ 3.000$	0 6,800

TABLE V-Showing Causes of Death for the Year Ending December 31, 1901.

	TOWNS AND REPORTERS.	Asheville Dr. C. V. Reynolds.	Charlotte Dr. F. O. Hawley.	Fayetteville	Goldsboro Geo. E. Howd, Mayor.	Greensboro John S. Michaux, City Clerk, 1	Henderson Dr. F. R. Harris,	Laurinburg	Lenoir V. Vent.	Marion	Monroe Dr. John M. Blair.
	RACES,	 		×.∵	∴	č.	કુંઇ	ĕ. ⊙.≅	ĕ.:		કુંઇ
Population.	By Races.	10.000	11,000 7,200	2,300	3.400	6,000	$\frac{2,300}{1,500}$	0009	300	800	1,850
TION.	Total	14,800	18,200	4,800	000.9	10,000	3,800	1.500	1,500	1,150	2,450
ANNUAL DEATH- RATE PER 1,000	By Races.	17.4 28.8	16.1	$\begin{array}{c} 11.6 \\ 22.6 \end{array}$	$\frac{18.5}{25.0}$	33.2	13.0 $23.3$	7.8	$\frac{11.7}{16.7}$	$\frac{17.5}{5.7}$	5.4
'AL H- E 000.	Total.	21.4	21.0	16.9	20.5	20.4	17.1	11.3	12.7	13.9	÷
	Typhoid Fever.	∞ 52	4	0101	- 67	c: <u>-</u>	- 57	0	1 2	610	0
	Searlet Fever.	1	0	0	0	0	0	0	0	0	00
	Malarial Fever.	00	1	0 2	200	100	0	010	0	00	0
	Diphtheria.	210	- 23	0	00	0	0	0 0	0	0	00
- •ų	Whooping-coug	00	41.44	0 %	0 -	08	$\frac{1}{0}$	0	00	00	00
	Measles.		0		00	00	00	00	00	00	m 0
	Pneumonia.	22	16 29	8 9	o.∞	$_{8}\Xi$	ec		2 -	₹-	0
	Consumption.	15	12	10.00	12	$\frac{6}{21}$	ಬಾ ಬಾ	0 1	0	€1 ¢	0 0
	Brain Diseases.	22.2	0	7	00 00	11	10 1	1 0	0	00	0
	Heart Diseases.	85	10	23	7 ::	→i~	1	0 0	÷ 0		- ÷
	Neurotic Diseas	00	0	0 0	61 61	0 5	¢1	<b>-</b> 0	00	0 0	00
	Diarrheal Dises	22	13 1	co t-	r- rc	13.4	01		÷1 0	0 1	51 €
'sas	All Other Diseas	188	106	11	20	£ 33	13	<b>→</b> 51	25 25	70	ಣ೦
	Accident.	= 7	21 7	00			- ::		00		==
	Suicide.	00	-=	0 0	0 1	- =	C 0	==	==	00	00
ΤĞ	Violence.	-21	0.0	00	00	00	00	00	00	==	
Тотаг Deaths	By Towns	171	177 205 3	81 E	88	E 88	8.8	r- <u>=</u>	70	<u> </u>	2 3
	By Towns. Deaths under 5	317	382	<u>5</u>	83	20.1	55		6:1	16	9
to the C	Still-born.	13.51	92 %	1 ×	12.51	84	T. 10	2 00	<del>-7</del> ?1	n 0	00
		C1 55	51 E	C1 ===	92	9 11		-0	50		2.5

TABLE V—Continued.

1	*II 10g-III2G	0 -	27 77	4.2	0.73	0	9	m 0	0	- 3
'erra'	Deaths under 5 : Still-born,	eo	44	9	17	0	15	9	0	13
1	By Towns.	63	319	61	53	38	- 23	06	17	108
Total Deaths	By Races.	15	152 167 3	30	34	24	25 x	20	10	65 1
_FĀ		10	00	01	0 -	00	00	0 1	00	00
	Violence.	00	01	00	00	00	00	00	00	00
	Suicide,	00	014	00	0 1	13		es	00	00
	Accident.	9 4	92	17	- ලං භ	× 1~	4	17	- 6	13
	All Other Diseas	0101	919	3	6.4	0.5		96	00	86
	Diarrhæal Disea	00	- 6	00	0	00	0.0	00	0.11	00
se	Neurotic Diseas	0 =	9	ිත භ	21.12	01.01	- co	es €1		5 1
	Heart Diseases.	0.81	12	01 23	12 61	20	0 11	- 8	40	9
	Brain Diseases.	0100			89	co 01	- 40	10.1-	01	800
1-	Consumption.		3 15	3 1 2 10	0.0	0101	98	9 ==	0101	12
	Pneumonia.	7.	1 7 0 13	00	0	00		00		00
	Measles.	00			00	00		-10	00	0 -1
٠,	Whooping-cough	00	ಣದ	00						
	Diphtheria.	0 1	210	10.	00	0	00		00	00
	Malarial Fever.	00	≎ 61	0.21	00	0	00	00	00	നയ
	Scarlet Fever.	00	00	0	00	0 0	00	00	00	00
	Typhoid Fever.	00	40	0 0	40	1 0	010	es c1	0	40
JAL FII- FE	Total.	13.8	23.1	14.3	26.5	12.2	14.5	14.1	6.8	22.0
ANNUAL DEATH- RATE PER 1,000	Ву Касев.	12.5	19.0 28.8	$\frac{10.3}{23.8}$	$\frac{22.7}{38.0}$	16.0	13.6 22.8	$\frac{12.8}{16.0}$	$\frac{5.0}{14.0}$	$\frac{18.7}{25.0}$
Tion.	Total.	2,100	13,800	4,200	2,000	3,100	3,650	6,400	2,500	4,900
Population.	By Races.	1,200	8.000	2,900	1,500	1,500	3,300	3,900	2,000	2,300
	RACES.	≱ંં	 ∴	 ⊙.≼	.:		≽ັບ	 ĕ.:	ĕ.	
	TOWNS AND REPORTERS.	Oxford Dr. S. D. Booth.	Raleigh T. P. Sale, Clerk Bd. Health.	Reidsville	Rockingham. Dr. Wm. P. S. Webb.	Rocky Mount. Dr. G. L. Wimberley, Jr.	Salem	Salisbury	Tarboro Dr. L. L. Staton.	Washington

1	Still-born.	100	e 5	00	139	228	8001
years.	Deaths under 5	1 - 20	66 148	13	412	897	25
AL	By Towns,	20	569	107	8692	İ	174
Тотац	By Races.	13	202	65	1246 1452	1 2698	86.88
	Violence.	100	0101	-00	711	112	00
	Suicide,	100	00	0	0100	20	00
	Accident.	00	01.00	00	2188	62	
'səs	All Other Disea	010	69 147	15	498	1011	36.
'səst	Diarrhœal Dise	0101	19	ო ∞	55.5	277 1	တ္က
.89.	Neurotic Diseas	00	38	0101	83	72	61 4
	Heart Diseases.	0 1	32	0	88	196	- ဗ က
	Brain Diseases.	00	10	40	88	149	5
	Consumption.	91	20 40	0.07	173	583	12
	Pneumonia,	1 80	18	66	122	241	6
	Measles.	00	00	00	r-4	11	00
'ч	guoo-gniqoodW	00	0	H 4	10	37	80
	Diphtheria.	00	3	0 -	119	17	00
	Malarial Fever.	123	288	ကက	39	95	-00
	Scarlet Fever.	00	00	10	∞ <del>-</del>	6	90
	Typhoid Fever.	00	64	21	51	116	10 10
JAL 7H- 7E 000.	Total.	13.8	27.0	30.1	20.3		
ANNUAL DEATH- RATE PER 1,000.	Ву Касез.	10.0	$\frac{19.0}{34.9}$	36.5	$\begin{array}{c} 15.6 \\ 27.3 \end{array}$		
ATION.	Total.	1,450	21,100	3,550	132,950		13,000
Population.	Ву Касев.	700	10,600	1,850	79.700 $53.250$	132,950	8,000
	RACES.	ĕ.c.	č.ĕ	ĕċ	¥.Ω.		
	TOWNS AND REPORTERS.	Weldon J. T. Gooch, Mayor.	Wilmington	Wilson Dr. W S. Anderson.	Total, 22 Towns	Grand Total	Durham Dr. Z. T. Brooks and Dr. N. M. Johnson.

Note. - Durham is not included in the total, because in May the city limits were extended and the population was increased from 6,679 to 13,000.

TABLE VI-Showing Causes of Death for the Year Ending December 31, 1902.

	Still-born.	==	24 16	44	44	15	9 11	0	- 67	100	00
years.	Deaths under 5	19	56	46	14	27	26 87	10	1 20	10	0
AL	By Towns.	326	362	275	99	133	253	09	27	∞	15
Total Deaths	By Races.	201 125	176. 186	135 140	23.3	65	130	88	111	<b>©</b>	13
	Violence.		0.0	00	10		0	0 1	00	00	00
	Suicide.	210	0	61 O	0	00	00	0	00	00	00
	Accident.	သက	rc. 20	4 1	001	00	°O'S		00	00	00
'səs	All Other Disea	48	$\frac{112}{102}$	49	13	24	21 66	000	410	90	200
*səst	Diarrhæal Dise	0.4	∞ <b>ວ</b>	$\frac{17}{26}$	∞	10	13	2	0 1	10	210
*sə:	Neurotic Diseas		ညော	rc 6/1	610		4	0.07	0	00	0
	Heart Diseases.	23 %	9 113	9	0.1	~ 1	$\frac{2}{20}$	21 63	000	00	00
	Brain Diseases.	20	01 21	4 0	6.0	0.0	51 xx	1		00	010
	Consumption.	46 24	13	14 19	ကသ	5.	25.2	ယ္ထ	00	00	00
	Pneumonia.	88	18	13	6110	10	$\frac{9}{10}$		3 1	100	0
	Measles.	00	00	ကက	00	0	0	00	00	00	00
Whooping-cough.		00	1	00	0 01	0	0 21	00	00	00	10
-	Diphtheria.	20.0	ೞೞ	0.0	0 0	0	100	0	00	00	00
	Malarial Fever.	081	1	00	00	2	0	00	00	00	00
	Scarlet Fever.	80	00	10	00	00	00	00	00	00	00
	Typhoid Fever.	ဖအ	9 2	8	1	0.10	0.09	0 3	41	00	00
7AL 111- 12000.	Total.	22.0	19.9	21.1	13.7	21.8	25.0	15.8	18.0	5.3	11.6
Annual Death- Rate Per 1,000.	By Races.	20.1 26.0	$\begin{array}{c} 16.0 \\ 25.8 \end{array}$	16.9	9.2	18.6	$\frac{10.3}{47.5}$	14.3	12.2 26.7	6.7	16.2
HON.	Total.	14,800	18,200	13,000	4,800	6,100	10,100	3,800	1,500	1,500	1,300
Population	Ву Races.	10,000	$\frac{11,000}{7,200}$	8,000	2,500	3.500	6,100	$\frac{2,100}{1,700}$	009	1,200	800
	RACES.	ું:		કંડ	≽ં:	કું:	ું.	કું.	કું.	કંં:	કુંગું
	TOWNS AND REPORTERS.	Asheville Dr. C. V. Reynolds.	Charlotte Dr. F. O. Hawley.	Dr. N. M. Johnson.	Fayetteville	Goldsboro Geo. E. Hood, Mayor.	Greensboro John S. Michaux, City Clerk.	Henderson	Laurinburg	Lenoir	Lexington J. H. Moyer, Mayor.

TABLE VI-Continued.

Still-born.	00	00	0 2	8 8	21.0	10	20	- 52	00	- 63
Deaths under 5	10		12	22	10	0	15	31.	51 10	ಬ ಬ
By Towns.	16	21	330	312	92	22	63	128	83	19
By Races.	11 5	15	13	154	35	15	56	€ ₹	= 21	9.
Violence,	00	0	0	0	10	00	00	0 21	00	00
Suicide.	1-0	00	0	1 0	0	0	10		00	0
Accident.	00	-0	0	1310		1 2	e 0	<b>7</b> 0	1 0	00
All Other Disea	~ -	90	13.11	51	15	r- 83	800	$\frac{21}{10}$	[ +#	63 12
Diarrhæal Dise			14	25	70 4	00	40	$\frac{2}{2}$ $\propto$		4-
Neurotic Diseas	00	0	0	00 CJ	00	00	00	610	00	0
Heart Diseases.	0-	21		16	r- x	00	7	ာဗ	0	0 1
Brain Diseases.	10	0	10	18	12	80	100	41	0 1	0 1
Consumption.	2120	00	H 4	30	<b>ω</b> 4	7.	7 0	மே	0101	0 1
Pneumonia.	00	0 2	0 80	2-6	44	0.0	210	13	0.61	00
Measles.	00	00	00	10	00	00	0.0	00	00	00
Whooping-coug	00	10	00	00	00	00	0	0	0	80
Diphtheria.	00	0	0	0.0	0	00	00	0	0	00
Malarial Fever.	00	00	00	04	12	00	00	00	0	00
Scarlet Fever.	00	00	0	100	0	00	0	0	00	00
Typhoid Fever.	80	0.0	40	es 61	0		0	r- 63	00	00
Total.	3.3	8.4	17.0	22.6	18.1	7.1	17.0	20.0	16.4	9.2
		6.0				44				5.0
By Races.	12 23									
Total.	1,200	2,500	2,300	13,800		3,100	3,650	6,400	1,400	2,500
By Races.	800	1,900	1,200	8,000	2.900	1,600	3,300	3,900	200	2,000
RACES.	) કંઇ	કંઇ	કું:	કં.	કું:	.:	ું.	કું.	.ა.	
Towns and Reporters.	arion Dr. B. A. Cheek.	onroe Dr. John M. Blair.	kford	aleigh T. P. Sale, Cl'k Bd. of Health	bidsville	ocky Mount	J. A. Vance, Mayor.	alisbury	buthport	Dr. L. L. Staton, Dr. W. J. Thigpen.
	RACES.  Total.  By Races. Total.  Typhoid Fever.  Scarlet Fever.  Malarial Fever.  Diphtheria.  Whooping-coug  Measles.  Measles.  Heart Diseases.  Brain Diseases.  Meurotic Diseases.  All Other Diseases.  All Other Diseases.  Suicide.  All Other Diseases.  Suicide.  Suicide.  Suicide.	1.2   RACES.  2.8   By Races. 1.2   Total. 2.3   By Races. 2.4   Total. 2.5   Total. 2.6   Total. 2.7   Total. 2.8   Total. 2.9   Malarial Fever. 2.0   Malarial Fever. 2.1   Mhooping-coug. 2.2   Measles. 2.3   Mhooping-coug. 3.4   Heart Diseases. 3.5   Measles. 3.6   Measles. 3.7   Measles. 3.8   Mhooping-coug. 3.9   Measles. 3.0   Measles. 3.0   Measles. 3.1   Mil Other Diseases. 3.1   Mil Other Diseases. 3.2   Meart Diseases. 3.3   Measles. 3.4   Meart Diseases. 3.5   Measles. 3.6   Measles. 3.7   Measles. 3.8   Malarial Diseases. 3.8   Meart Diseases. 3.9   Measles. 3.0   Measles. 3.0   Measles. 3.1   Malarial Pever. 3.1   Malarial Pever. 3.1   Malarial Pever. 3.1   Malarial Pever. 3.1   Measles. 3.2   Measles. 3.3   Measles. 3.4   Measles. 3.5   Measles. 3.7   Measles. 3.8   Measles. 3.8   Measles. 3.9   Measles. 3.9   Measles. 3.0   Measles. 3	M. Blair,   C.W. C.W. RACES.  C.W. C.W. RACES.  C.W. C.W. By Races.  1,100  C.W. C.W. C.W. By Races.  C.W. C.W. C.W. By Races.  1,100  C.W. C.W. C.W. By Races.  C.W. C.W. C.W. Brain Diseases.  C.W. C.W. C.W. By Races.  C.W. C.W. C.W. C.W. C.W. C.W. By Races.  C.W. C.W. C.W. C.W. C.W. C.W. C.W. By Races.  C.W. C.W. C.W. C.W. C.W. C.W. C.W. C.	OFFERS.  OFF	Contraction   Contraction	Constraint   Con	Colored Processes   Colored Process   Colored Processes   Colore	Colored Process   Colored Pr	Contract   Contract	

TABLE VI-Continued.

Deaths under 5 years. Still-born,		3 0 0	20 23	0.0	3 0	76 10 137 42	358 0 0	418 89 593 145	1 234
		53			<sub>2</sub> ;			1	1011
TOTAL	By Towns.	1	109	21		585	144	3153	
To	By Races.	13	51	13	a. 83	215	89	4 1502 9 1651	13 3153
	Violence.	100	0	00	00	0	0.61	4.0	
	Suicide.	00	00	00	00	2 1	0	120	13
	Accident.	1-0	7 0	10	00	15		85.5	83
ses.	All Other Disea	9 2	19	40	18	128	83 88	590 631	1221
*səst	Diarrhæal Disea	010	c. 90	10	00	82.53	14	175	359
*sə:	Neurotic Diseas	10		210	00	31		43	95
-	Heart Diseases.	010	ec e1	es 0	0 01	30	212	106	231
	Brain Diseases,	00	9 01	10	00	13	es 61	101	150
	Consumption.	00	9	ಣ	0	33	9	173	394
	Pneumonia.	001	0 13	40	0 1	228	97	123	272
	Measles.	00	.00	0 0	00	0 0	0	94	12
·ų	Myoobing-coug	00	1 4	0.0	00	0.4	9.0	27	34
	Diphtheria.	00	00	00	010	€5.	00	919	23
-	Malarial Fever.	00	0 13	00		13	0 9	22.88	112
-	Scarlet Fever.	00		0	00	00	0.0	1 9 1	1
	Typhoid Fever.	70	014	0	00	@ r0	41	69	128
7 . 00	Total.	12.9	8.61	16.1	21.3	27.6	21.2	20.5	
ANNUAL DEATH- RATE PER 1,000.			001	19.0			29.7		
AN DE	By Races.	13.0	$\frac{17.0}{23.2}$	19	12.8	33.4		16.3	
ż	Total.	1,700	5,500	1,300	1,500	21,000	008.9	153,950	
ATIO									
Population.	By Races.	1,000	3,000	300	200	10,000	3,800	92,100 61,850	153,950
_ =	RACES.	≱::		 ∴	 ∴		.c.ĕ		
-		اسم	سب	-1-		<u></u>		~~	
	Towns and Reporters.	Wadesboro Dr. J H. Bennett,	Washington Dr. John G. Blount.	Waynesville Dr. Thos. Stringfield, Mayor.	Weldon J. T. Gooch, Mayor.	Wilmington Dr. Chas. T. Harper.	Wilson. Dr. W. S. Anderson.	Total, 26 Towns	Grand Total

# REPORT OF TREASURER FOR THE TWO YEARS ENDING DECEMBER 31, 1902.

1901.		EXPENDITURES.
Jan.	1.	Western Union Telegraph Co., telegrams in Decem-
		ber, 1900\$
		Postage on Bulletin for December
		Andrew Andrews, one set book-shelves for library
	28.	Southern Express Co., charges on vital statistics books to seven towns
Feb.	4.	Dr. W. T. Pate, second analysis of Lumberton water
		supply
		Salary of Secretary and Treasurer for January
		Stamps, letters to all physicians in State in regard
		to bacteriological examinations by Department of
		Agriculture and for general use
		Western Union Telegraph Co., telegrams in January
	6.	Postage on Bulletin
		Stamps
		Sharpening knives of Horton mailing machine
March	2.	Western Union Telegraph Co., telegrams in February
		Salary of Secretary and Treasurer for February
	26.	E. M. Zzzell, State Printer. 200 postal cards for
		replies from Chairmen of Boards of County Com-
		missioners and Mayors in the matter of organiza-
		tion of County Sanitary Committees
	27.	Stamps
		One pot paste
April	1.	Salary of Secretary and Treasurer for March
		Office rent, first quarter
	3.	Dr. J. A. Egan, Treasurer, annual dues to National
		Conference of State and Provincial Boards of
		Health
		Western Union Telegraph Co., telegrams in March
	5.	Freight and drayage on 1 box small-pox posters
	22.	Stamps
May		Salary of Secretary and Treasurer for April
		Dr. Richard H. Lewis, expenses two trips to meet
		by request County Sanitary Committees-Greens-

boro, \$5.55; Durham, \$1.95.....

7.50

May	4. The Sanitarian, subscription to 9 copies for members	20.00
	of board	28.00
	Postage on Bulletin, three months	3.64
	6. Western Union Telegraph Co., telegrams in April.	1.15
	13. A. W. Shaffer, S. E., sundry per diem and expenses	
	from January 4th to May 2d, inclusive, as per	
	voucher	43.35
	25. Stamps	10.00
	Dr. George G. Thomas, per diem and expenses, in-	
	spection Anson County State Farm, committee	
	meeting at Raleigh in regard to Wilmington sew-	
	erage, and annual meeting at Durham	37.25
	31. Dr. H. H. Dodson, per diem and expenses, annual	
	meeting	26.35
June	3. Salary of Secretary and Treasurer for May	83.34
	Dr. Henry W. Lewis, per diem and expenses, annual	
	meeting	28.65
	7. Stamps for mailing biennial report and general	
	purposes	20.00
	8. Western Union Telegraph Co., telegrams in May	1.02
	17. M. Firestack, 10 copies Knopf's Prize Essay on	
	Tuberculosis for members of board	2.00
	25. Stamps, biennial and general purposes	10.00
	27. Southern Express Co., charges on packages to mem-	
	bers of board	5.11
July	1. Salary of Secretary and Treasurer for June	83.34
	Office rent, second quarter	15.00
	Postage on Bulletin, two months	2.22
	H. M. Farnsworth, staining and varnishing book-	
	cases in office	3.50
	3. Dr. S. W. Battle, per diem and expenses, annual	
	meetings at Tarboro, \$32; Durham, \$28	60.00
	Dr. W. P. Ivey, per diem and expenses, annual meet-	
	ing at Durham	31.30
	5. Dr. Francis Duffy, per diem and expenses, annual	
	meeting	25.00
	6. E. M. Uzzell, State Printer, 200 postal cards for	
	notices in regard to biological examinations of	
	drinking waters	2.00
	11. A. Williams & Co., sundry items to 1st inst., as	
	per voucher	3.20
	29. Dr. R. H. Lewis, expenses, inspection State insti-	
	tutions at Morganton and sewerage at Blowing	
	Pools	25.47

July	30.	E. M. Uzzell, State Printer, 500 postal cards, Board	- 00
	0.3	of Health letter heads	5.00
	31.	E. M. Uzzell, State Printer, 250 postal cards ad-	
		dressed for replies from newspapers of State	2.50
Augus	t 2.	Stamps	10.00
		G. McCarthy, Biologist, stamps for mailing steril-	
		ized bottles for samples of drinking water	5.00
		Western Union Telegraph Co., telegrams in July	.50
		Salary of Secretary and Treasurer for July	83.33
	5.	Dr. George G. Thomas, per diem and expenses, in-	
		spection of State institutions at Morganton and	
		sewerage at Blowing Rock	41.25
	27.	Thomas Whittaker, I copy Celli on Malaria	3.15
Sept.		Salary of Secretary and Treasurer for August	83.33
•		Postage on Bulletin	1.20
	11.	E. M. Uzzell, State Printer, 700 postal cards, 500	
		for notices to County Superintendents of Health	
		and 200 to County Commissioners	7.00
	21	Dr. R. H. Lewis, expenses, annual meeting of Na-	,,,,,
	21.	tional Conference of State and Provincial Boards	
		of Health and American Public Health Associa-	
		tion at Niagara and Buffalo, respectively	58.80
Oet.	,		
Oet.	1.	Postage on Bulletin	1.45
		Salary of Secretary and Treasurer for September	83.34
		Office rent, third quarter	15.00
		Postage on Bulletin	.94
Nov.		. Salary of Secretary and Treasurer for October	83.33
	27.	. Stamps, letters to all physicians in State in regard	
		to work of biological laboratory	15.00
Dec.		Bauseh & Lamb, supplies for biological laboratory	4.00
	2.	. E. B. Estes, supplies for biological laboratory	2.38
		Whitall, Tatum & Co., supplies for biological labo-	
		ratory	2.49
	3.	. Salary of Sceretary and Treasurer for November	83.33
	5	. Western Union Telegraph Co., telegrams in No-	
		vember	.60
	31	. Office rent, fourth quarter	15.00
		Drayage on Bulletin to post-office, twelve months,	
		at 15 cents	1.80
		Salary of Secretary and Treasurer for December	83.3-
		Dr. R. H. Lewis, expenses to Tarboro in relation	
		to small-pox	5.38

1902			
Jan.	3.	Western Union Telegraph Co., telegrams in De-	
		cember	2.05
		Postage on Bulletin, three months	2.89
	22.	Dr. R. H. Lewis, expenses, small-pox meeting at	
		Rocky Mount	5.90
		The Sanitarian, subscription to 9 copies for mem-	
		bers of the board	28.00
	28.	Dr. George G. Thomas, per diem and expenses, Rocky	
		Mount meeting and Raleigh	12.00
Feb.		Salary of Secretary and Treasurer for January	83.33
	5.	Western Union Telegraph Co., telegrams in Janu-	_
		ary	.87
March	4.	Salary of Secretary and Treasurer for February	83.34
		Western Union Telegraph Co., telegrams in Febru-	
		ary	1.29
	13.	R. L. Polk, 1 copy Polk's Medical Register	6.00
		Postage on Bulletin, two months	2.16
	20.	Southern Railway Co., freight on two boxes of	
		mailing eases for biological laboratory	1.88
April	2.	Salary of Secretary and Treasurer for March	83.33
		Office rent, first quarter of 1902	15.00
	7.	The Reporter, 3 copies containing opinion in People	
		vs. Gordon	.78
		Improved Mailing Case ('o., 500 double metal mail-	
		ing eases for biological work	94.55
		Dr. J. A. Egan, Treasurer, annual dues to Confer-	
		ence of State and Provincial Boards of Health	
		of North America	10.10
	12.	Southern Express Co., charges on mailing eases to	
		Superintendents of Health and reports to mem-	4.00
		bers of board	4.80
May		Salary of Secretary and Treasurer for April	83.33
		Stamps for biological work	1.00
	6.	Western Union Telegraph Co., telegrams in April.	1.06 $15.00$
_		Stamps	83.34
June		Salary of Secretary and Treasurer for May	
		Western Union Telegraph Co., telegrams in May	1.55
	26.	Dr. W. P. Ivey, per diem and expenses, annual meet-	37.50
		ing at Wrightsville	57.50
		Dr. George G. Thomas, per diem and expenses, au-	0.05
		nual meeting at Wrightsville	9.05
		Dr. Richard H. Lewis, expenses, annual meeting at	10.30
		Wrightsville	2.76
		rostage on Bulletin, three months	2.70

## NINTH BIENNIAL REPORT. 147

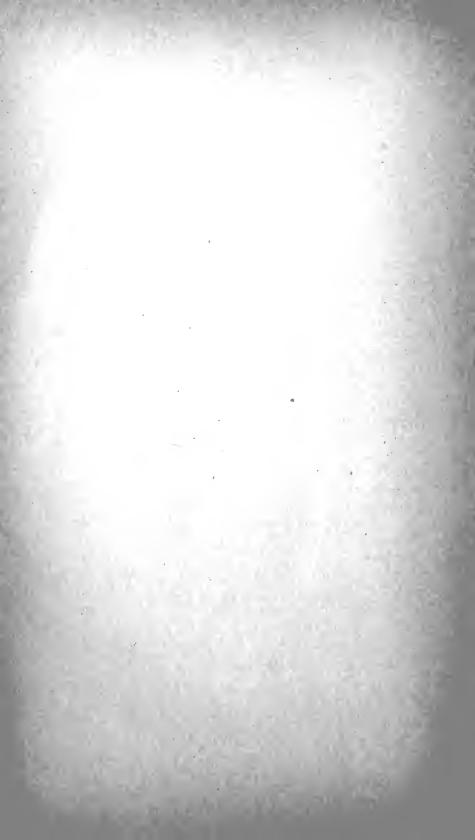
July	1.	Salary of Secretary and Treasurer for June\$	83.33
		Office rent, second quarter	-15.00
	12.	Dr. J. L. Nicholson, expenses as delegate to Ameri	
		can Congress of Tuberculosis at New York, June	
		1 to 4	-53,40
	28.	Stamps	10,00
Augus	t 2.	Salary of Secretary and Treasurer for July	83.33
	8.	Dr. George G. Thomas, per diem and expenses, in-	
		spection State institutions at Raleigh and Oxford	26.40
	13.	G. McCarthy, stamps for postage on biological	
		samples	5.09
Sept.		Stamps	15.00
		Salary of Secretary and Treasurer for August	83.33
		Western Union Telegraph Co., telegrams in August,	.50
	9.	Dr. W. H. Whitehead, per diem and expenses, annual	
		meeting and inspection of State institutions at	
		Raleigh	20.75
		Postage on Bulletin, three months	3.03
Oct.	1.	Salary of Secretary and Treasurer for September	83.34
		Office rent, third quarter	15.00
	3.	Western Union Telegraph Co., telegrams in Septem-	
		ber	.25
Nov.		Salary of Secretary and Treasurer for October	83.33
		Western Union Telegraph Co., telegrams in October	.50
Dec.		Salary of Secretary and Treasurer for November	83.33
	4.	Western Union Telegraph Co., telegrams in No-	
		vember	.50
	6.	J. L. Ludlow, C. E., per diem and expenses, annual	
		meeting in 1901; sewerage of Penitentiary and	
		Central Hospital, May, 1901; consultation with	
		the Governor, May, 1902; investigation in regard	
		to water supply for Central Hospital: November,	
		1902	65.80
	6.	E. B. Estes & Sons, supplies for bacteriological	
		laboratory, carriers for specimens	13.95
		Stamps	10.00
		Postage on Bulletin, two months	2.25
	23.	Stamps	5.00
		P. H. Andrews, Post-office Financial Clerk, to secure	
		payment in advance of postage on Bulletin	5.00
	24.	Dr. Richard H. Lewis, expenses, meeting of Ameri-	
		can Public Health Association at New Orleans,	
		December 8 to 12	78.45

Dec. 24. Dr. Richard H. Lewis, expenses, inspection Normal and Industrial College and A. & M. College for the colored race at Greensboro	5.40
Hospital for the Insane and of convict camp near	
Dover	38.00
Dr. W. P. Ivey, inspection of convict camps, two	
in Mitchell county and one in Wilkes county	51.25
27. News and Observer Publishing Co., three Year Books,	
1901, 1902, 1903	3.50
31. Salary of Secretary and Treasurer for December	83.34
31. Office rent, fourth quarter of 1902	15.00
Dr. Henry W. Lewis, per diem and expenses, inspec-	
tion of State convict farms	9.75
J. L. Ludlow, C. E., per diem and expenses, inspec-	
tion of public water supplies of State	200.56
Dr. Francis Duffy, per diem and expenses, annual	
meeting at Wrightsville, inspection of Eastern	
Hospital	30.16
Drayage on Bulletin to post-office, twelve months	
at 15 cents	1.80
-	
	33,653.50
RECEIPTS.	
Balance on hand January 1, 1901	64.59
Appropriation received in 1901	2,000.00
Appropriation received in 1902	
Amount due Treasurer	88.91

\$3,653.50

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## TENTH BIENNIAL REPORT

OF THE

## NORTH CAROLINA

# BOARD OF HEALTH

1903-1904



### TENTH BIENNIAL REPORT

OF THE

## NORTH CAROLINA

# BOARD OF HEALTH

1903-1904

RALEIGH
E. M. Uzzell & Co., State Printers and Binders

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ELECTED BY THE MEDICAL SOCIETY OF THE STATE OF
NORTH CAROLINA.
S. WESTRAY BATTLE, M. D
HENRY W. LEWIS, M. DJackson.  Term expires May, 1907.
J. L. Nicholson, M. DRichlands.
Term expires May, 1905.
W. H. WHITEHEAD, M. D Rocky Mount.
Term expires May, 1905.
APPOINTED BY THE GOVERNOR.
W. P. Iver, M. DLenoir.
Term expires May, 1907.
RICHARD H. LEWIS, M. D., SecretaryRaleigh.
Term expires May, 1907.
George Gillett Thomas, M. D., PresidentWilmington.
Term expires May, 1905.
Francis Duffy, M. DNew Bern.
Term expires May, 1905.
J. L. Ludlow, C. E
Term expires May, 1909.

## COUNTY SUPERINTENDENTS OF HEALTH.

Alamance Dr. H. R. Moore,
AlexanderDr. C. J. Carson.
AlleghanyDr. Robert Thompson,
Anson
Ashe
Beaufort
Bertie
Bladen
Brunswick
Buncombe Dr. D. E. Sevier.
Burke Dr. J. L. Laxton.
Cabarrus Dr. R. S. Young.
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Haywood
Henderson Dr. J. G. Waldrop.
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Iredell Dr. M. R. Adams.
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MartinDr. W. H. Harrell.
Mecklenburg
MitchellDr. Virgil R. Butt.
Montgomery
Moore
NashDr. J. P. Battle.
New Hanover
Northampton
Onslow
OrangeDr. C. D. Jones.
PamlicoDr. H. P. Underhill.
Pasquotank
PenderDr. R. J. Williams.
Perquimans
Person
PittDr. Zeno Brown.
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Randolph
RichmondDr. F. J. Garrett.
Robeson
RockinghamDr. Sam. Ellington.
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Tyrrell
Union
Vance Dr. H. H. Bass.
Wake Dr. J. J. L. McCullers.
Warren Dr. M. P. Perry.
Washington
WataugaDr. H. McD. Little.
Wayne
Wilkes
Wilson Dr. W. S. Anderson.
Yadkin Dr. T. R. Harding.
Vancor Dr. I. I. Ray

### LETTER OF TRANSMISSION.

NORTH CAROLINA BOARD OF HEALTH,
OFFICE OF THE SECRETARY,
RALEIGH, January 2, 1903.

His Excellency. Charles B. Aycock,
Governor of North Carolina.

Sir:—In accordance with section 3, chapter 214, Laws of 1893, I have the honor to present for transmission to the General Assembly this, the Tenth Biennial Report of the North Carolina Board of Health.

With great respect,

RICHARD H. LEWIS, M. D., Secretary and Treasurer.

### TENTH BIENNIAL REPORT

OF THE

### NORTH CAROLINA BOARD OF HEALTH

1903=1904

Two years ago, in the opinion of the health authorities of many of the States, our country was threatened with an epidemic of bubonic plague. In spite of the positive assertion on the part of several of the leading bacteriologists of the United States of its presence in San Francisco, the fact was persistently denied by the Governor of California and the Board of Health of that State. In consequence, believing that the proper precautions were not being taken to prevent its spread to other sections, a sufficient number of States, including our own, requested a conference with the Surgeon General of the United States Public Health and Marine Hospital Service under the law governing that bureau. This was granted, and the meeting was held on January 19, 1903, the Secretary of our Board representing North Carolina. As the result of some very plain talk and the adoption of strong resolutions on the subject, the unfavorable conditions in San Francisco were remedied and the menace averted.

During the past biennial period our State has been spared any unusual outbreak of disease, with the exception of the occurrence of typhoid fever in the Baptist Orphanage at Thomasville, in which there were sixty-seven cases, with two deaths, and of smallpox in many localities.

While our work of educating the people in the principles of Hygiene in general, and more particularly as to the best methods of avoiding the infectious and therefore preventable diseases, has not been relaxed, special efforts have been made in regard to *Uncinariasis*, or hook-worm disease, and tuberculosis.

The work in the biological laboratory has grown in amount and consequently in value to the people of the State. The demands upon it at present are more than can be met with the facilities available.

In the body of the report the subjects alluded to above will be found considered at length.

### MEETINGS OF THE BOARD.

# MINUTES OF THE ANNUAL MEETING AT HOT SPRINGS.

Hot Springs, N. C., June 2, 1903.

Annual meeting of the Board: Present: Drs. Thomas, Battle, Ivey, Duffy, Nicholson and R. H. Lewis.

The minutes of the last meeting were read and approved. Dr. J. N. McCormack, the genial Secretary of the Kentucky Board of Health, was invited to participate in the meeting.

The Secretary made a report of work done. The Treasurer made his report. Drs. Duffy and Nicholson were appointed a committee to audit the same. They reported it to be correct.

There was a special discussion of vaccination and the best virus.

On motion the Board adjourned to meet next day at 12 M. in conjoint session with the State Medical Society.

RICHARD H. LEWIS, Secretary.

### CONJOINT SESSION

OF THE

### STATE MEDICAL SOCIETY WITH STATE BOARD OF HEALTH,

HOT SPRINGS, N. C., JUNE 3, 1903.

Dr. George G. Thomas, President, in the chair.

CHAIRMAN: I do not desire to make any remarks in opening this meeting, except to renew again the thanks which were offered to Dr. Stiles for his great help to us by presenting the different phases under which that serious disease, hook-worm, can be known and cared for. I think his visit is an epoch in the history of North Carolina and of the South, and I think he deserves from this meeting, especially from the Board of Health, assuredly, very decided gratitude, and he may be assured of our continued esteem.

Dr. Knox: I desire, as President of the Medical Society of North Carolina, to most heartily second the motion, and regret not making the same remarks last evening, but owing to the Doctor's leaving so soon, rather confused matters.

Chairman: The report of the Secretary is now in order. The report is read by Dr. R. H. Lewis, Secretary.

## NORTH CAROLINA BOARD OF HEALTH, REPORT OF SECRETARY, JUNE 1, 1902, TO JUNE 1, 1903.

A full statement in detail of the work of the Board from the time of our last meeting, consisting chiefly, in addition to the routine work of the Secretary's office, of inspections of the State institutions and of the public water supplies, will be found in the Biennial Report for 1901 to 1902. This report, notwithstanding the fact that the copy for the same was furnished the State Printer at the usual time, is still in his hands, and I am therefore unable, much to my disappointment, to distribute it at this meeting to those interested. It will, however, be mailed to any one asking for it as soon as it comes from the press.

Since the beginning of the new biennial period, on January 1, 1903, our most important work has been in the line of legislation.

Believing that incompetent physicians constitute one of the greatest menaces to the public health, I felt it to be my duty to try to obtain from the General Assembly, if possible, such an amendment to our medical license laws as would cure the defect existing therein as declared by our Supreme Court in its recent decision in *State v*. *McKnight*. We gained much, but not all we asked.

The purity of our drinking waters being one of the prime essentials of health, legislation for the better protection of our municipal water supplies was sought and obtained. Inasmuch as a full statement in regard to these two matters, together with copies of the acts, has already been printed in the monthly Bulletin, it is unnecessary to repeat them in this report.

I also prepared a bill appropriating twelve hundred dollars to aid in our bacteriological work, and succeeded in getting a favorable report from the Committee on Appropriations of the House. that was the last of it. It apparently fell immediately to sleep and never waked. Besides the above, I likewise assisted, at their request. the representatives of the State Nurses' Association in preparing a bill for the registration of trained nurses, and in securing its passage. The importance of thorough training on the part of the nurses is second only to that rightly demanded of the physicians, and this legislation is clearly in the interest of the public health. While not interfering with the right of any one to nurse the sick, the act, after January 1, 1904, permits the registration and the use of the title R. N. (registered nurse) only to those obtaining a license from the State Board of Examiners, consisting of two physicians to be elected by the State Medical Society and three trained nurses to be elected by the State Nurses' Association. Hereafter the appearance of the letters R. N. after a nurse's name will be a guarantee of her thorough training, and if our physicians will discriminate in their recommendations in favor of that class they will create a very strong incentive on the part of all trained nurses to enroll themselves in the future among those who will surely be recognized as the best in their ealling.

#### BIOLOGICAL LABORATORY.

Learning that the State Board of Agriculture might be compelled to withdraw their most valuable aid to the cause of health in having made for us biological analyses of suspected drinking waters, sputum, etc., on account of certain extra demands upon their income made by the last Legislature, I secured the concurrence of the State Waterworks Association in certain provisions in the Act to Protect Water Supplies, requiring all water companies to have made in our laboratory a monthly analysis of their waters, and pay five dollars for each analysis. If the water companies will comply with the law in this

respect the expense of the laboratory can be shared by us and the people at the same time be more fully protected. Upon the invitation of the Board of Agriculture, I appeared before them on May 30th and explained the situation and our ability under the Act to Protect Water Supplies to assist in paying part of the expense incident to the hygienic work which they have been so generously doing for us free of charge since December, 1899. I proposed, speaking for the Board of Health, to pay one-half of the salary of the biologist and to furnish all new apparatus and reagents that might be required for our special work, the Board of Agriculture to furnish the laboratory with its permanent equipment, attendance, water and gas. At their request, I put the proposition in writing and it was formally accepted by a unanimous vote on their part.

#### SMALLPOX.

Smallpox, I regret to say, has been much more prevalent during the past year than ever before, and more fatal, confirming our predictions to that effect, in view of the indifference of our local authorities on the subject of vaccination. And unless there is a change in this respect I see no reason to anticipate anything else than a continuing recurrence of smallpox until all the people have either been vaccinated or have had the disease.

During the past year—May 1, 1902, to May 1, 1903—smallpox has occurred in fifty-eight counties, the number of cases being: White, 1,681; colored, 2,595; total, 4,456; with deaths, white, 58; colored, 105; total, 163, the death rate per cent being respectively, 3,12, 4,04, 3,66. For the first time in our experience the death rate from this disease has been nigher among the negroes than among the whites, the figures heretofore having been very much in favor of the former. A comparison by years—the first period, however, extending from the occurrence of the first case on January 12, 1898, to May 1, 1899, a little over fifteen months—is given in the following tabular statement:

Year.	ۇر بېدە	Number of Cases.			Number of Deaths.		
	Number of Counties.	White.	Colored.	Total.	White.	Colored.	Total.
1898-1899	38	162	554	716	8 4.93	9	2.76
1899-1900	55	731	2.075	2.806	35 4.78	30	65
1900-1901	54		1,415	1.945	15	1.44	2.31
Death rate, per cent *1901-1902	55	616			2.83 21	1.63 27	1.95
Death rate, per cent					3.41 58	2.28 105	2.59 163
Death rate, per cent Total number of cases Jan. 12.					3.12	4.04	3.66
1898, May 1, 1903		3,900	7.835	11.735			
Total number of deaths Death rate, per cent					137 3.51	194 2.47	331 2.82

<sup>(\*</sup>In this year there were in Wilson County, according to conservative estimates, from twelve to fifteen hundred cases of smallpox, as diagnosed by experts sent to the county, which the Superintendent of Health insisted were not variola, and in consequence did not report.)

From the above statement, it appears that there have been reported to the Secretary since the first case 11,735 cases of small-pox with 331 deaths. How many more cases, under the names chicken-pox, Cuban itch, etc., have escaped record, it is, of course, impossible to say. We have good reason to believe that there were certainly over a thousand such cases in one county—Wilson. The only other similar instances were neighborhood outbreaks that were not discovered until numbers had recovered.

When we consider the loss to the State in the 331 deaths, the expense of caring for nearly 12,000 such cases and the indirect loss in trade, the statement is quite impressive. It is likewise lamentable when we realize that it could have been prevented by the vaccination of all the people.

The following is a tabulated statement by counties of smallpox during the past year:

# SMALLPOX IN NORTH CAROLINA, MAY 1, 1902, TO MAY 1, 1903.

Counties.	Cases.			Deaths.		
	White.	Colored.	Total.	White.	Colored.	Total.
Alamance	4	1	5			
Anson	3	0	3			
Beaufort	0	1	1	0	1	
Buncombe	305	116	421	2	0	:
Burke	73	152	225			
Cabarrus	4	13	17	1 0	0	
Caldwell	10	2 75	85	0	1	
Carteret	7	10	17	0	i	
Catawba	10	66	76			
Chatham	9	0	9			
Cleveland	30	20	50	2 5	0	
Craven	16	163	179	5	30	3
Cumberland	0	ĩ	1			
Currituck	9	2	11			
Davidson	29	2	31			
Davie	7	3	10			<b></b>
Durham	100	40	44 375	1		
ForsythGaston	100 75	275 25	100	1	3 1	
Gates	19	5	5	1	1	
Graham	28	J	28			
Granville	6	72	78		1	
Guilford	58	70	128	22	2	3
Hayword	28		28	2		
Henderson	18	49	67			
redell	5	37	42			
Johnson	3	1	4			
Jones	9	9	· 18	1	2	
Lincoln	75	8	83			
Macon	24		24			
McDowell	100	200	300	1	1	_
Mecklenburg	101	326	427 17	11	43	5
Montgomery		17	1			
Moore	5	1	6	1		
New Hanover	J	2	2			
Northampton	. 7	4	11			
Onslow	3	47	50		2	
Orange		. 50	50			
Polk	56	25	87			
Randolph	1	32	33			
Richmond	1	_5	6			
Rockingham	54	73	127	5	2	
Rowan	2	125	127	,	2	
Rutherford	79	65	144 95		1	
Sampson	11	94 20	31		1	
Stanly	40	25	65	1		
Stokes	119	63	182		1	
Swain	300	*4	304			
Transylvania		4	4			
Union	11	172	183	1		
Vance		. 12	12			
Wake	1	3	4			
Wilson	4	3	7			
Yadkin	13	4	17			
Yancey	2		2			
m + 1 (** *** *** *** **	1 001	0 505	4 450		105	16
Total (in 58 counties)	1,861	2,595	4,456	58 3.12	105 4.04	3.6

<sup>\*</sup>Indians.

CHAIRMAN: You have heard the report. Are there any remarks to be made thereon? If not, what is your pleasure? I would be glad to hear from any of the members in regard to any difficulties they may meet in the performance of their duties, especially in the management of smallpox.

Dr. J. M. Manning: Six years ago when smallpox made its appearance in the State, I, unfortunately, happened to be the Superintendent of Health of Durham, and the first cases occurred in Durham County. I remember the circumstance of a man who came there from Greenville-ran the blockade from Greenville and came to Durham, his old home. Of course, when the news got out in the city that there was a case of smallpox, there was quite a scare among the citizens. We were totally unprepared to take care of a case of contagious disease. We had no pest-house. The Mayor and myself rode all over the neighborhood and the county to locate a tent, and we were met with shot-guns wherever we proposed putting a tent, but finally the county owned a small strip of land, half a mile from the County Home, and we succeeded in establishing a pest-house in the shape of a tent. With the active co-operation of the city and county authorities, and the management of the different manufactories in Durham, we succeeded in vaccinating a large proportion of the citizens of the town, and that epidemic-I can hardly call it an epidemic-was stopped. We set fire, by kerosene oil, to one of these houses near the Market House, in the central part of town, and we had the water supply to prevent fire extending to other buildings. In that epidemic we only had ten cases. We succeeded in getting the epidemic stopped. Since then they have adopted a different mode of managing cases of smallpox—and a method that I can't very heartily approve. The county and city authorities share conjointly the expense of the smallpox epidemics, and they become alarmed about the amount of it, so the plan-the method now used in Durham—is to send a case of smallpox to the pest-house and vaccinate the other inhabitants of the house and disinfect them as much as possible, and turn them on the community. Whether that is very effective, I am not prepared to say. Those cases are kept on the quiet and you really do not know what is going on.

Dr. Battle asks Dr. Carl Reynolds to give his experience, who, he says, is rather bashful.

Dr. Carl Reynolds: Mr. President and gentlemen, I am a little bashful, but, as it has happened, I have had quite a little experience with smallpox in Asheville, N. C., for the past five or six years. I have had three cases of confinement, coming to maturity, and three miscarriages, and have never lost mother or child. In about four or five hundred cases altogether in the last five years I have only had one death, and I doubt seriously if I would have had any at all if the parents had been truthful. The cases were reported a family of nine. I went immediately to the house of suspects and vaccinated them all. They claimed that every member of the family had been vaccinated. I examined them, they had scars. I revaccinated them. They smuggled under the bed clothes a child about four months of age. Three or four days thereafter this mother broke out with smallpox, and the entire family was sent to the pest-house, and on the next day, on my visit, I found this nursing babe who had never been vaccinated. I vaccinated the child in three places, neither of which was successful; the child developed smallpox and died in ten days. I thoroughly believe that if that child had been vaccinated with the rest of the family it would have been living to-day. My experience with smallpox for the last five years is that I have never seen a case in the pest-house that had been successfully vaccinated, not even a case of varioloid, that had been successfully vaccinated in the last five years. One case I vaccinated five times. Turned him out twice. It was, in my opinion, a fight between the vaccine and the smallpox. He developed

twelve bumps, and was well in about twelve days. Vaccination is the thing, gentlemen, and unless we have the hearty co-operation of all our brother physicians, both in the cities and the counties, we will have with us forever smallpox. We have had quite a struggle in Buncombe with the outside physicians on account of smallpox being mild in form. They say it isn't smallpox, but chickenpox, etc., and consequently do not enter with us in the work of vaccinating the people. But in the city of Asheville-it has been thoroughly vaccinated twice within the last five years—and I venture to say there are not 300 people in the 15,000, unless they have come into the city within the last six months, that were not successfully vaccinated, and for the last eight months I have not received a single case of smallpox that has not come into the city since our last vaccination. There is one thing that I would like to touch upon while I am on my feet. I think I wrote to Dr. Lewis about it. We ought to have a law compelling the common carrier, all railroads, to compel every member of their force to be vaccinated; and until we do have the railroad people vaccinated that come from one place to another, earrying these germs and dropping them down, we will continue to have smallpox. That is very important and essential. Another thing, Mr. President, I would like to give a little estimate of my care of the smallpox, that is, relative to the expense. These gentlemen who are laughing behind me know the reason. I had in my care 227 cases of smallpox, and the expense per capita—they staved in the house from two to three weeks, one man was in there eight weeks-including their maintenance, food, fuel, fire, guard service, physician's bill, vaccine, formaldehyde, etc.—everything, the sum total per capita per diem was 40-7.10 cents per day. What do you think of that? I think it was very reasonable, but when they began to look around again for a new health officer they accused me of highway robbery-bleeding the city of Asheville; so I thought I would come down in this society and tell you about it, that you had better be careful when you treat cases of smallpox. Forty and seven-tenths cents was my average cost for the treatment of 227 cases.

CHAIRMAN: Many refuse to submit to vaccination because of the serious arms which have followed the practice, and that in turn seems to have been the result of very bad vaccination. We were told by Dr. McCormack that he himself, and probably a number of others who were interested with him, were considering the return to the use of humanized virus. Lately the Marine Hospital Service has published a bulletin setting forth some examinations made in the different outputs of manufacturers that were manufactured in this country. I would be glad if Dr. Stiles would tell us what he knows of the subject.

Dr. Stiles: There is one principle that I hold to in life, and that is to not talk too much about that I know little about. This work was done by my colleague, Dr. Rosecrans, and to sum up his results in a very few words, he found when he began the investigations that the vaccine virus was not so free from bacteria as we had a right to expect. He presented a paper on the subject before the Medical Society, giving his results, and that stirred up the manufacturers of the virus to a considerable extent. He made an examination a year later and found that the virus was very much more pure, so that his investigations seem to have had a very good effect upon the manufacturers, and it is certainly hoped on the part of the men interested in that particular investigation that this effect will be lasting. With reference to the relative value of the bovine and human virus I have a decided hesitancy in discussing the subject before men who have had so much more experience in that matter than I have. It is, really, entirely out of my special line of work, and I would not want to say anything to prejudice either the one way or the other. I think that the Board of Health is in a much better position to speak authoritatively upon the subject than I am.

Dr. Butler: Mr. President, I came to this meeting at your suggestion yesterday on the train, not with the intention of doing any talking. I came here rather for the pleasure of listening and learning. I do not know that I have anything new to say on the subject that you are not already familiar with. You know that since last year investigations have been going on in regard to the intermissibility of bovine and human tuberculosis, but I do not know if anything has been done that you are not perfectly familiar with, and I would not wish to take up your time discussing it. tendenev is to show that the danger which was once fancied to exist from the consumption of the products of the lower animals is not nearly so great; that there is little danger perhaps, yet I think the result of investigation shows that there is danger, and some of the recent work seems to confirm it. The tendency of recent research was to prove that there did exist some danger, and while I am chiefly interested myself from a veterinary standpoint, even if there was no possibility of communicating it to man, still I do not think the physician can afford not to take the advice that has been given us, and use all precaution as to communication of bovine tuberculosis to the human family. I certainly think we ought to strictly supervise the products from the dairy.

Chairman: Any other remarks, gentlemen?

Dr. R. H. Lewis: I would like to offer the following resolution:

Resolved, That the conjoint session of the North Carolina Bòard of Health and the State Medical Society adopt, in so far as the local conditions will permit, the recommendations of the Chief Statistician of the United States Census Bureau as to collection and registration of vital statistics.

Seconded and adopted.

CHAIRMAN: Any further business before the house?

Some discussion, raised by Dr. Carl Reynolds, as to the one who should furnish certificates to be placed on coffins. Dr. Lewis states that there is no law. It is the general opinion of the members that the undertakers are the ones who should furnish such certificates.

It is moved that the conjoint session of the State Medical Society and State Board of Health adjourn.

Seconded and carried.

# MINUTES OF THE ANNUAL MEETING AT RALEIGH.

Raleigh, N. C., May 24, 1904.

Annual meeting. Present: Drs. Duffy, H. W. Lewis, Ivey, R. H. Lewis and Mr. Ludlow.

In the absence of President Thomas, Dr. Duffy was elected President pro tem.

The minutes of the last meeting were read and approved. The Secretary presented a request from Dr. McCarthy, the Biologist of the Board, for an increase of salary. It was agreed to make, on the part of the Board of Health, an increase equal in amount to any increase made by the Board of Agriculture, not to exceed a total salary of fifteen hundred dollars per annum.

The Secretary stated that it was impossible to do the work of his office without the aid of a stenographer and typewriter, and asked, if it should be thought by the Board to be proper and advisable, for an appropriation of \$20 a month for this purpose. On motion of Dr. Ivey the Secretary was authorized to employ a stenographer for part of her time on the best terms possible, not to exceed \$20 a month.

The following committee of inspection were appointed:

State Institutions at Raleigh—Ivey, Thomas, and Lewis, R. H.

The University—Thomas and Lewis, R. H.

The Normal and Industrial College and the  $\Lambda$ . & M. for the colored—Battle and Lewis, R. H.

The Eastern Hospital for the Insane—Duffy and Nicholson.

The Penitentiary farms-Lewis, H. W., and Ludlow.

The convict eamp in Wilkes County-Ivey.

The Orphan Asylums at Oxford—Whitehead and Lewis, R. H.

On motion of Dr. H. W. Lewis, the engineer of the Board, Mr. Ludlow, was requested to assume the general supervision of the public water supplies of the State, with authority to visit and make personal inspections whenever in his judgment it might be necessary, this to take the place of the biennial inspections heretofore made.

The following delegates to sanitary meetings were appointed:

Annual conference with the Surgeon General of the U.S. Public Health and Marine Hospital Service—Lewis, R. H.

National Conference of State and Provincial Boards of Health—Duffy and Lewis, R. H.

American Public Health Association—Referred to President and Secretary with power to appoint.

It was suggested that an effort be made to give the school children in the State instruction in elementary hygiene, also for the improvement of the sanitation of the public schools. The Secretary stated that this latter had been done in the form of a special issue of the Bulletin on School Hygiene, which had been sent to all the public-school teachers by the State Superintendent of Public Instruction.

The Treasurer submitted his report with vouchers. Drs.

Ivey and H. W. Lewis, appointed a committee to audit the same, reported it correct.

On motion the Board adjourned to meet at 12 M. next day, in conjoint session with the State Medical Society.

RICHARD H. LEWIS,
· Secretary.

#### CONJOINT SESSION

OF THE

### MEDICAL SOCIETY OF NORTH CAROLINA

AND THE

#### NORTH CAROLINA STATE BOARD OF HEALTH.

HELD ON WEDNESDAY, MAY 25, 1904,

AT RALEIGH, N. C.

At this meeting Dr. Francis Duffy of the Board of Health in the unavoidable absence of President Thomas, presided over the conjoint session. Present, the members of the State Board of Health and the general meeting of the Medical Society.

Dr. Lewis: Mr. President and Gentlemen, I wish to express my gratitude for one encouraging feature to-day. It has been the custom for the Medical Society to promptly melt away at the mention of the joint session. It is doubly encouraging to us that this has not been so marked as usual. I see before me a gratifying attendance. The annual report is as follows:

#### ANNUAL REPORT OF THE SECRETARY OF THE NORTH CARO-LINA BOARD OF HEALTH, MAY 1, 1903—MAY 1, 1904.

As must always be the case, the work of your Secretary during the past year has been largely of the usual routine character, dealing with the common every-day affairs of sanitation. These, however, are none the less important because they are commonplace, as they practically cover the whole field of hygiene. But we have one entirely new subject as applying to our State of great interest and importance, viz.:

#### UNCINARIASIS OR HOOKWORM DISEASE.

Inspired by the admirable address of Dr. Charles Wardell Stiles, Zoologist of the United States Public Health and Marine Hospital

Service, at our last meeting at Hot Springs, on the Uncinaria Americana, of which he was the discoverer, and its prevalence in our Southern States, I promptly set to work to interest our physicians in the subject. In several issues of the Bulletin the matter was called to their attention, a summary of Dr. Stiles' official report and other articles being printed, and the medical reader was urged to send specimens of faces from suspected cases to our laboratory for diagnosis. The response to this, I regret to say, has been disconraging, as only thirty-two applications for the examination have been made during the year. This, however, does not represent, by any means, all the work done in relation to the hookworm disease. Dr. W. S. Rankin of Wake Forest, in the early fall, offered to give a month of his time to the Board without charge, other than his actual expenses in making a personal investigation, proposing to visit with his microscope the physicians in a number of our eastern counțies and make the diagnosis for them on the spot. Authority was obtained by correspondence with the members of the Board to accept Dr. Rankin's He began his investigation by a trip during Christmas week offer. to Northampton and Edgecombe counties. The results were so meagre and discouraging, as will appear in his report, which he will read, that we agreed that it would not pay to continue the personal work, and the spring tour of three weeks was accordingly abandoned. He has, however, done other work on this line by correspondence and among students of the college, as he will detail to you. The physical signs of uncinariasis are so striking and the diagnosis from the mere general appearance of a victim to it, taken together with his environment, is so easy that I have no doubt the diagnosis has been made in many instances without resort to the microscope and the proper remedy administered.

From the facts in our possession it is certain that uncinariasis is very prevalent in our State, and that it is not limited to the sandy section, as Stiles suggests. It deserves and should receive the careful attention of all practitioners. With the lights before me I would say unhesitatingly that every case of pronounced anemia, especially in young persons living in the country, should be investigated with a special view to this very harmful intestinal parasite.

#### TUBERCULOSIS.

Tuberculosis continues our most fatal disease. Experience has demonstrated that much can be done for its prevention. We should therefore make an earnest effort to check its ravages as far as possible. I therefore bring the matter forward in order that it may be discussed in the conjoint session, so that we may have the benefit of the wisdom that is said to appertain to a multitude of counsellors.

The question of the prevention of tuberculosis is theoretically easy, but practically most difficult—very much more so in our Southern

country than elsewhere on account of the large number of negroes. The infectious principle being existent only in spintum and other discharges from tuberculosis cases and in the infected milk and meat of the lower animals, the thing to do, of course, is to destroy the spintum and prevent the sale and consumption of the tuberculous milk and meat. But how to accomplish this in actual practice to more than a most superficial extent is the question. The answer to this question is, by the thorough education of the public mind on the subject. So the practical problem is how to reach and influence the people, especially those having the disease and their immediate families who necessarily are in close and constant contact with them.

The first step in the solution of this problem is to locate the tuberculous patients. To accomplish this a few States and cities have resorted to legislation requiring compulsory notification of tuberculosis as of other contagious diseases, so that the proper instructions may be given, inspections made and disinfection practised. well on paper, and in large cities with thoroughly organized health and police departments and sufficient money to support them it is no doubt of much practical value. But in communities such as our State, the population of which is chiefly rural or resident in small cities, towns and villages without the full facilities for enforcement indicated, we cannot expect very much from this means. is this true of the colored people. Their temperament, training and environment make the solution of the problem in their case, to all intents and purposes, hopeless-for many years to come, at any rate. And it is among them the disease is most prevalent, in the proportion of nearly three to one of the whites. That we cannot expect much is the more apparent when we call to mind the fact—the most discouraging fact—that a very large percentage of our physicians. although required to do so by law, will not report the more actively contagious diseases, such as scarlet fever, diphtheria and even smallpox, although the last-named disease is, we believe, generally reported, but not so much because the law requires it as because the doctor wants to get rid of it. In the present state of public sentiment the indisposition to report tuberculosis will be much greater. same time it is desirable to have this done if it can be brought about. We are glad to say that our own city of Raleigh has enacted stringent legislation on this line, and the results will be watched with much interest, as it is the first movement in the State for compulsory notification, although anti-spitting ordinances have been in force several years, first in Asheville and later in Raleigh.

The methods usually resorted to for the education of public sentiment are tuberculosis congresses, the organization of anti-tuberculosis societies, public addresses, newspaper articles, the distribution to the individual of literature bearing on the subject and the establishment of special sanatoria. And this crusade has evidently borne fruit, for the decrease in the death-rate from tuberculosis has been

much more marked in the decade 1891-1900 than in any similar period previously. It is interesting to note, however, that the death-rate had been steadily diminishing in our larger cities before Koch's discovery of the bacillus and the demonstration of its contagious character. This is attributable to the improvement in the condition of the masses, better housing, better food, shorter hours of labor, the bicycle, athletic ont-door games and the open-air life has come to be the vogue, thereby begetting greater resisting power. In these respects the advance has been much greater in the past decade than before, and it is no doubt to no inconsiderable degree responsible for the decreased death-rate.

In the prevention of infection with the tubercle bacillus there are three principal objects to be sought: 1. The building up of greater resisting power in the individual. 2. The prevention as far as possible of the development of the bacilli. 3. The prevention of their distribution by their prompt destruction.

- 1. The dangers of the inspiration or ingestion of the bacilli are so great that it is a matter of doubt if any one living even a few years has not at one time or another taken them into his system, and yet only about one-ninth of the population, it is estimated, become fatally infected. This is due to the protective or resisting power inherent in every one to a greater or less extent. It is well established that this power to resist disease, to repel it entirely, or to overcome it is greater in those who are in vigorous health. And this state of vigorous health is to be attained and preserved by living in accordance with the principles of hygiene, special stress being laid upon the paramount importance of pure, fresh air in the greatest abundance and at all times as near an out-door life as possible.
- 2. The prevention of the development of the bacilli is to be accomplished chiefly by an carry diagnosis, when the disease is a pure tuberculosis and before the degenerative changes which constitute consumption have taken place. In the former the bacilli, being tied up in the unbroken tubercles, are not thrown off to any extent, while in the latter they are discharged in the sputum by the million. I would earnestly commend to your careful perusal a very able article, appearing originally in the New York Medical Journal and reprinted in our January Bulletin, on the subject of "The Relation of Early Diagnosis and Treatment to the Prevention of Tuberculosis," by Dr. Pottenger, president of the Anti-Tuberculosis League of Southern California. He estimates that from 75 to 95 per cent. of early cases, with proper care, should be cured, thereby preventing the development and distribution of the myriads upon myriads of bacilli from the same cases going on in the consumptive stage. Dr. Pottenger says that the expert in tuberculosis "should be able to determine the presence of the disease in the vast majority of cases before bacilli appear in the sputum by the clinical history and physical examination. If not by these," he goes on to add, "the tuberculin test can be used with con-

idence and safety." I beg to emphasize this last statement, for while I know that some object to the use of the tuberculin test in the human, claiming that it is sometimes harmful, the early diagnosis in the tuberculosis stage is of such overwhelming importance to both the patient and the public that inasmuch as it will enable the comparatively inexpert to make the diagnosis with certainty, the little risk, if there be any, should, in my judgment, be taken in doubtful cases. In any event, there can be no excuse for failure to resort at once to the microscope in every suspicious case for the detection of the bacilli upon their first appearance in the sputum, for the examination will be made free of charge for any physician applying to the laboratory of the Board of Health.

3. The prevention of the distribution of the bacilli must be accomplished by the patient himself. He can do this by the invariable habit of expectorating only into spittoons partially filled with some disinfectant, or into the fire when in the house, and by the use of a pocket spittoon, bits of cloth or paper napkins (never the handkerchief) that can be burned, when out of doors. In a word, he must never let his sputum get away from him except into a disinfectant or the fire; never turn it loose to dry and assume the form of dust, especially in the house.

Having thus outlined the problem very inadequately, but as fully as the limits of this report and your time permits, we now come to the all-important question as to how we can best solve it.

The most conspicuous movement at present is towards the establishment by the State of special sanatoria for the tuberculous. Experience has demonstrated their great success, not only in curing the disease in its incipient stage—in over fifty per cent.—but chiefly as educators of the people, for every patient returning to his home thoroughly trained in the proper management of his case, so as to prevent the reinfection of himself and the infection of others, is an educator for his neighborhood. But at present, and doubtless for some years to come, we cannot hope for an appropriation by the State for this purpose. The other methods generally employed to educate the people and prevent the spread of disease by compulsory notification, distribution of literature, organization of societies, etc., have already been referred to, but it seems to me that the most effective method of reaching and attacking the very citadel of the enemy has never been sufficiently emphasized. This method I believe to be through the family physician. It is the family physician who first locates the case of tuberculosis; it is he who is sought for advice by the patient and his friends—no one can get so near to the problem as he, and no one can have such influence as he in securing the proper management of the case on the part of both the patient and family. No health official nor organization can compare with him in the practical accomplishment of this work if he can be induced to do it. Even if all the cases of the disease could be located and the proper instructions for

prevention furnished—a manifest impossibility without his aid—they would make but little impression unless re-inforced by his endorsement and earnest personal advice. He is the medium—and the only medium in the vast majority of cases—through whom the principles of preventive management can effectively reach the individual case. It would be superfluous to argue this matter further. It is self-evident that the solution of this great and difficult problem, the greatest health problem of this or any age, turns chiefly on the attitude of the attending physician. The practical question before us, then, is: How can we arouse his interest and secure his cordial co-operation in the work? It is this particular question that I wish to hear discussed, that I may be helped in the performance of my official duty in the premises.

I would respectfully suggest that this body, composed of a very large proportion of the leading physicians of the State, put itself on record by adopting some such resolutions as the following:

WHEREAS, tuberculosis, of all diseases the most fatal, being the cause of death in about one-ninth of all who die, is a contagious and therefore preventable disease; and

Whereas, its prevention depends upon the early diagnosis, upon the strict observance of certain precautions in the relations between the patient and his associates and upon a mode of life in accordance with the well-established principles of hygiene; and

Whereas, these matters come within the immediate jurisdiction of the attending physician, whose influence in securing their observance is far greater than all other influences combined: therefore, be it

Resolved, That it is the sense of the Medical Society of the State of North Carolina and of the North Carolina Board of Health in conjoint session assembled, that the spread of tuberculosis, the greatest scourge of mankind, can be most effectively prevented only with the active aid and cordial co-operation with the health authorities of the family physician.

Resolved, That not only every member of this body, but every physician in the State, is earnestly requested to use every effort, professional and personal, to promote this great work for humanity.

I would also suggest the propriety of adopting the following:

Resolved. That it is the sense of the State Board of Health and of the State Medical Society in conjoint session assembled, that provision should be made in our hospitals for the insane and in the State's Prison, and in the county jails as far as practicable, for the separation of tuberculous cases from the other inmates uninfected with the disease.

(Both resolutions were adopted unanimously).

#### SMALLPOX.

As was anticipated in our last report, smallpox has continued with us to an increased extent. The total number of cases during our smallpox year—May 1st to May 1st—is 5,370, as against 4,456 the year before. Of this number 2,840 were white and 2,530 colored, with 35 and 34 deaths, respectively. It will be noted that for the first time the disease was more prevalent among the whites. The death-rate was the smallest in the history of the recent outbreak, being 1,23 per cent, among the whites and 1,34 per cent, among the colored. We have experienced the same difficulties in the management that have confronted us all along, due chiefly to the extreme mildness of the disease, although they have been somewhat less than heretofore.

At the request of the authorities of the city of Durham, who were experiencing much opposition to vaccination. I visited that city and addressed the people on the subject, with good results following.

The general smallpox outlook seems to be the same it was a year ago. It will continue from year to year until all the people have been successfully vaccinated or had the disease.

The following is a report in detail for the past year:

## REPORT OF SMALLPOX FROM MAY, 1903, TO MAY, 1904.

Counties.	Number of Cases.			Number of Deaths.		
	White.	Colored.	Total.	White.	Colored.	Total.
lamance	325	19	344	2		
lleghany	7		7			
nson	6 200	148	154	4	1	
sheertie	200	16 4	216 4	-4	. 1	
laden	24	1	25	2		
uncombe	43	19	62		3	
urke	7	5	12			
abarrus	26	1	37			
aswell		82	82 4		2	
atawba	4	3	7			
nerokee	28		28			
nowan		1	1			
eveland	19	13	32			
olumbus	50	150	200		1	
umberland	7	11	18			
avidson	137	253 149	390 192	12	13	
avieuplin	43	149	192			
upiinupiin	40	300	340			
dgecombe		9	9		2	
orsyth	47	53	100			
aston	35	16	51	3		
reene	2	35	37		2	
ranville	6	13	19	2		
uilford	94 30	7	101 30			
arnettaywood	1	,	1			
enderson	44	7	51			
edell	21	10	31			
ackson	50		50			
ohnston	29	4	33			
cDowell	6	7	13			
acon	40 577	10 12	50 589			
adison	6	15	21			
ecklenburgontgomery		52	52			
oore		1	1			
ew Hanover	- 25	7	32			
ender	1	7	_8			
erquimans		34	34			
erson	10	13	13 28			
itt	18	10 28	28 35			
andolph	28	3	31			
ichmond	27	34	61		1	
obeson	300	700	1,000	2	3	
ockingham	11	28	39	,	,	
owan	22	6	28	3		
utherford	75	9	75 9			
ampson	20	72	92			
cotland	54		54			
urry	49	4	53			
wain	5	1	6			
nion	1	15	16			
ance	42	1	43	3		1
/ake	4	12	16		1 4	1
Varren	5	60	5 65		4	
VayneVilkes	102	36	138	2		
VilkesVilson	12	3	15			
adkin	27		27			
ancey	30		30			
		0.500	F 050	-	61	
Total (in 65 counties)	2,840	2,530	5,370	35	34	1
Death rate, per cent				1.23	1.34	1

#### LABORATORY.

The following is the report of Dr. McCarthy, the Biologist, in detail of the work done for the Board of Health in the joint laboratory of the Department of Agriculture and the Board of Health during the past year:

## REPORT OF BIOLOGIST.

Raleigh, May 5, 1904.

DR. RICHARD H. LEWIS.

Secretary North Carolina State Board of Health, Raleigh, N. C.

DEAR SIR:—I herewith submit a detailed report of the work done in the laboratory of the Board of Health during the twelve months included in the period from May 1, 1903, to April 30, 1904.

Total number of analyses and determinations	522
Public water supplies, monthly analyses	22G
Analyses of water for physicians and health officers of counties	136
Examinations of sputum for physicians	57
Examinations of throat exudates, diphtheritic	53
Examinations of blood for plasmodium malaria	18
Examinations of fæces for hookworm	32
Total	522

The official examinations of public water supplies, under the law passed by the last Legislature, was begun in May, 1903.

No work was done in the laboratory during June. The full number of analyses required of the water companies under the law was therefore eleven. This number was actually taken by only four companies; the others, by carelessness or other causes, falling below the requirements of the law, as shown by the annexed list:

Water Companies.	No. of Analy- ses Taken.	Water Companies.	No. of Analy- ses Taken.
Asheville		Raleigh	11
Concord	2	Reidsville	
Charlotte	10	Rocky Mount	
Dunn	1	Roxboro	
Durham	10	Salem	
Fayetteville (municip	al) 8	Sanford	
Fayetteville (old syst	em) 0	Salisbury	10
Gastonia		Southern Pines	
Goldsboro	10	Statesville	
Greensboro	11	Tarboro	
Henderson	8	Waynesville	
Hendersonville	5	Washington	
High Point	6	Wadesboro	
Lumberton	6	Wilson	
Monroe		Wilmington	
New Bern		Winston	

It must be said in justice to a few of these water companies that they began business during the year, and could not therefore take the full number of analyses. The companies included in this latter category are Dunn, Hendersonville, Roxboro.

The law directs the Board of Health to make these analyses for a charge of \$5 each. The usual cost of biological analyses of water is \$10 each. When we began this work it was with the idea of making only the biological analyses in the laboratory of the Board of Health, the chemical analyses to be made, if possible, by the Department of Agriculture. But, in fact, the chemical work was not done except in a very irregular way. The Department of Agriculture is supported by a special tax levied upon the farmers of the State. It is supposed to devote its energies entirely to strictly agricultural work. What work the Department can do in other lines must depend upon the chemists being unengaged.

Water analyses, to be of much value, must be made regularly and systematically. It was therefore determined to do the chemical as well as the biological work in the laboratory of the Board of Health.

Soon after starting the chemical work we found that the larger part of the water companies were using too much alum in their filters and passing a part of this into the filtered water. The various companies were notified of this fact, and, though there was at first some indignation expressed upon the imputation cast upon their waters, the companies soon improved their services and apparatus, so that the last or April series of analyses showed for the entire State but two supplies giving the reaction for alum, and both these for only very minute quantities. We are now fully justified in stating that no State or country anywhere has municipal water supplies superior to that of North Carolina—so far as regards freedom from pollution and injurious chemical compounds. There are thirty public water companies in the State. The water of all is very soft, and, with a few exceptions, is free from organic matter. All of the supplies derived from deep wells-in number, five-contain much dissolved earthy matter, and a few approach the quality of mineral waters. The deep waters are much harder than the surface waters.

The quality and safety of the public or municipal water supplies of the State is enormously superior to the average quality of the well waters sent to the laboratory. So great is the difference that the Biologist, as the result of four years' work in this line in North Carolina, is disposed to say that no incorporated town having 1.000 inhabitants can afford to permit its citizens to be supplied by private wells of the ordinary shallow type. The danger of typhoid hangs like the sword of Damocles over every community getting water from shallow wells. This danger is minimized for communities having a common supply which is closely guarded and the quality kept up to the standard by monthly analyses, such as our State law requires. It would therefore seem to be the duty of health officers and physi-

cians to advise even small towns to abandon shallow private wells for a common public water supply.

As regards the samples of well water sent by physicians and county health superintendents, I am able to say that the average quality is superior to that received during the preceding year. There were fewer grossly polluted samples.

Of the fifty-seven samples of sputum received, about one-third were free from bacillus tuberculosis. The samples showing the bacillus came from different parts of the State, but chiefly from the Central and Piedmont regions.

Of diphtheritic exudates fifty-three were received, and all but two showed the bacillus. Nearly all samples of exudates were described by attending physicians as "tonsillitis" or "membranous croup." Determinations of diphtheritic exudates were given precedence over all other lines of work in the laboratory, and the result is, in all cases where the physician can be reached by telegraph so transmitted, usually within one hour after sample reaches the laboratory. We could handle more of this class of work.

In examinations of blood for the malaria parasite our facilities are not yet appreciated by the medical profession, or else the type of malaria found in North Carolina is easily diagnosed clinically. Only eighteen samples came in, and the larger part of these were free from the germ. Only the tertian parasite has been found.

Of faces we have received thirty-two samples, and all but four contained the hookworm or its eggs. Most of the samples also showed large quantities of sand, indicating recent geophagism. The ages of the patients as given by physicians varied between six and sixty-one years. The larger part were under twenty-five years. The samples came from the following counties: Caldwell, Iredell, Granville, Johnston, New Hanover, Mecklenburg, Nash, Stokes and Wake.

During the past twelve months, as in the preceding period, a few applications were received for the Widal test for typhoid fever. considerable trouble and expenditure of time and materials, the Biologist stocked suitable cultures for this work at three different times in the two years, but the demand for this work proved too small to justify us in keeping up the cultures. The average demand is only about four per year. For the Widal test the culture of bacillus typhosus must be virulent and not over four or five months, at longest, from the spleen of a person dead of typhoid. The culture must also be transferred from tube to tube at least once a week, thus entailing much labor and consumption of material. With so much other work pressing upon the laboratory, we could not afford for the small demand to keep up typhoid culture as required, so at present we decline applications for the Widal test. The clinical alternative is usually between typhoid and malaria, and an examination of the blood by microscope will determine whether or not it is malaria.

A part of the Biologist's time is given to the work of the State Department of Agriculture. The work of the Board of Health alone is more than enough to occupy the entire time of one man. Therefore, until such time as the Legislature sees fit to provide for the entire support of the laboratory, no further extension of the work is possible.

Respectfully submitted,

GERALD McCarthy, D.Sc., Biologist.

It will be observed that many of the public water supplies have been quite derelict in the matter of monthly analyses. The act to protect water supplies requires every company selling water to the public to have an analysis made every month by the Board of Health or in such laboratory as it may select, and yet in a total of 334 analyses required only 226 sent samples. I have tried faithfully to induce them by gentle means to send the samples regularly and promptly. My last letter has borne fruit, but there are some still that neglect this duty. While the law provides a penalty for failure to have the analyses made, it is manifestly undesirable to resort to the courts. Public opinion is the best lever to employ, and if the physicians living in cities and towns having public supplies would interest themselves in the matter the companies would be more apt to respond. great importance that they should, not only as a guarantee to consumers of the purity of the water sold them, but also as a means of support to the laboratory. Thanks to an enlightened, broad-minded Board of Agriculture and a Commissioner cordially in sympathy with this work for the people, we have been enabled to do the very ereditable amount of work for the public health shown in the report, but times change and men change with them, and the support of the laboratory is extremely precarious. It should be sustained by a direct appropriation by the State for the purpose, and it is to be hoped that it may be made by the next Legislature.

While Dr. McCarthy, having no assistance, could hardly do more work than he has done, still it is discouraging to note how comparatively few of our physicians avail themselves of the privileges offered free of cost beyond a few cents of postage. The number, however, is growing, and will no doubt increase more and more as time passes.

In conclusion, I appeal to the members of our noble profession to lend their interested support in this great work in which we are engaged. While some are disposed to sneer, and while it must be admitted that the spirit of commercialism which pervades all callings at the present time has not left us untouched, it still remains true that, excepting perhaps the sacred ministry, there is no body of men whose hearts are so open to the cry of distress or whose minds and hands are so ready to administer to its relief without pecuniary reward as the physicians of our country. It is a noble profession, and on the principle of noblesse oblige it is the duty of every physician, and should be his pleasure, not only to cure disease and suffering, but also to aid in their prevention.

CHAIRMAN: The report is before the house. Any discussion of it?

Dr. Stephens: I want to say just one word as to tuberculosis. The worthy Secretary, in calling attention to the prevention of tuberculosis, speaks of education of the laity in regard to preventative measures. These things are matters of importance, but there is one thing even greater—the educating of the family physician in those things which are necessary to make early diagnosis. If the family physician is qualified to do this the education of the laity will follow. The family physician needs to have impressed upon him the fact that it is his duty to examine the sputum of a patient having a cough of more than one week. It is his duty to examine the chest carefully in every case of declining health and not let false ideas of modesty stand in the way. It is his duty to see that an examination is made. I would also suggest that the figures mentioned in the resolutions suggested by our worthy Secretary be changed to this effect. He mentions the fact that one-seventh of the deaths is due to tuberculosis. Our last census makes it between one-ninth and one-tenth, and the last census of our own State gives the figures as 11.15-100 per cent. of the total mortality of the State.

Dr. Paquin: It is rather a source of congratulation to me that our Secretary has so emphasized the matter to which I called the attention of the Society on yesterday. It is the most important subject in the domain of medicine to-day. It is true that prevention is the key to the situation. The practical solution of this question is the great desideratum

in our State. How shall we succeed in combating this enemy? As I said on yesterday, let every man of you constitute himself a committee of one to go home and teach the community at large how to prevent, and himself how to diagnose, the disease. A great many physicians fold their arms and say they can not diagnose that disease. They say, "What can't be cured must be endured." The microscope is only confirmatory of the opening symptoms of the disease. There are signs and symptoms by which the ordinary physician can diagnose the disease in its early stages. What are they? Physical examination of the chest, the temperature and tuberculin test. By these three methods you can tell whether the disease is tuberculosis or consumption. Let us go home and perfect these methods. It is useless for me to go into details. If you will make a diagnosis early while yet in its incipiency, this cruel disease will not earry so many to an untimely grave, and prevent the infection being distributed in different portions of the country. Therefore, in view of this, I move that we adopt the resolutions as suggested by our worthy Secretary. Now, gentlemen, I move for the adoption of these resolutions as a whole, unless some one calls for them separately. The motion was carried.

Dr. Lewis: There is a fault with a great many of us—that of being a little too kind-hearted sometimes and of not being perfectly candid in informing the patient or family that it is a case of tuberculosis. It is a very painful thing to do to tell the patient or family that it is a case of tuberculosis, but it is important that they should know and take necessary steps to cure it.

CHAIRMAN: Any further discussion?

Dr. Faison: I think it is right to make a diagnosis early. I think a law should be passed preventing any one having tuberculosis from coming within our borders.

Dr. Lewis: I think it would be helpful when the Legislature meets if a resolution should be adopted by this body

for an appropriation by the State for a biological laboratory. I think it would be helpful to us.

Dr. IVEY: I move that this body ask the Committee on Legislation to approach the coming Legislature in reference to that point.

The motion was made and carried.

Dr. Lewis: I have not received the advice I want—the best practical method of reaching the family physician. You are all family physicians. You can tell me very much better than I can how to reach yourselves. Make me some suggestion by which I can reach the profession and I will be very much obliged. How would a personal letter with a two-cent stamp on it do? Leave off the heading of "Board of Health." Have it directed by a lady and it would be opened and read.

Dr. Stancill: I would like to suggest an evangelist from the State Board of Health making a visit to the family physicians. In the long run it would pay.

Dr. Lewis: I thought that idea was ventilated some years ago. If we could get the State to appropriate for an evangelist it would be the best plan, but it is impracticable.

Dr. Roberts: There are in every county men who are competent to write up these subjects. Dr. Lewis is acquainted with the medical profession, and he knows who to apply to in each county. Let us ask each physician in each county to write up on these subjects which he wants investigated. I know it would not be successful in every case, but it will accomplish something. I think a great deal can be done through the County Medical Societies, and if you reach one in ten you have done something. \* \* \* It is only by line upon line, precept upon precept, that you can do anything along this line.

Dr. Lewis: It is the intention to put literature on this subject in the letter to the physician.

CHAIRMAN: We have the report of the Secretary that requires adoption.

Motion was made to adopt the Secretary's report. Motion carried.

Motion was made for adjournment of the conjoint session. Motion carried, and the conjoint session was adjourned.

## REPORT OF BIOLOGIST.

The biological work of the State Board of Health as at present carried on was begun in 1901, when by the liberality of the State Board of Agriculture the Secretary of the Board of Health was permitted to send samples of suspected drinking-water to the biological laboratory which the Board of Agriculture had recently established for its own particular work. The great hygienic value of biological analyses, especially in regard to drinking-water, soon became apparent, and June 1, 1903, the Board of Health arranged with the Board of Agriculture to share the expenses and facilities of the laboratory already established.

The principal line of work carried on on the part of the Board of Health is water analysis. A large amount of work is, however, done in examining pathological samples, including sputum for bacillus tuberculosis; throat exudates for bacillus diphtheriæ; feces for uncinaria; and blood for the parasite of malaria.

As showing the increase in volume of work and in the interest and favor with which the work is regarded by the medical profession, the following figures showing the total number of samples examined in the laboratory for each of the four years are hereto appended:

Total	samples	for	1901	294
Total	samples	for	1902	357
Total	samples	for	1903	476
Total	samples	for	1904	785

Approximately two-thirds of these samples were water. The remainder were pretty evenly divided between the different classes of pathological samples above-named.

The Legislature of 1903 amended the law governing public water companies so that the Board of Health was required to make a monthly biological analysis and a quarterly chemical analysis of each water supply. The Board was empowered by this act to charge a fee of \$5 for each biological analysis, but no provision was made for paying for the chemical analyses, which are therefore made free by the biologist. The fees received from the water companies and one-half the salary of the biologist paid by the Board of Agriculture, constitute at present the sole income of the laboratory, notwithstanding the fact that about one-half our laboratory work is done free of charge for physicians of the State.

The practical value of the monthly analyses of the public water supplies cannot be overestimated. These systematic examinations serve to assure the patrons of water companies that no pollution of the supply can occur without being quickly detected. A good illustration of the value of regular and frequent examinations of a public water supply is furnished by the experience of the town of Butler, Pa. This town has a population of 18,000. It had an apparently efficient system of water-works, but made no regular biological examinations of the water. During the summer of 1903 some accident occurred to the filter which remained for a time undetected, and for that time passed into the service mains water practically unfiltered. The first warning the water company had of the break-down in the filter was the outbreak of typhoid fever among the water consumers. A severe epidemic ensued, resulting in the death of 111 persons and the serious illness of 1.348 others. First and last, the expenses of this epidemic, besides loss of life, were estimated to be not less than \$40,000. The experience with typhoid fever in Butler, Ithaca, Watertown, Plymouth, and other cities having public water supplies but not controlled by frequent and regular biological examinations, proves conclusively that typhoid fever may be spread to a most disastrous extent by such waters, and that without efficient control by biological analysis no consumer can feel safe in using such water.

The monthly analyses of water supplies now provided for by the law governing water companies in North Carolina enable the biologist to detect even the smallest trace of pollution, and by promptly advising the responsible officers of the water companies concerned, the source of the contamination can be discovered and the pollution stopped before the health of the water consumers is affected. In this manner the public health is safeguarded and at the same time the interests of the water companies protected. Reports of pollution are treated confidentially so long as the companies show the proper zeal in remedying the trouble. More than one water company in North Carolina could certify to the assistance the Board of Health's laboratory has been to them in protecting the health of their patrons and, by preventing panic among patrons, the financial interests of the companies,

In a general way, we can say that no State now has a purer, more wholesome or better-guarded system of water supplies than North Carolina. The mechanical system of filtering water is exclusively used in this State. Alum is employed to coagulate suspended matter and clear the water. When we made our first chemical analyses of these waters we found that a large proportion of the water companies were passing free alum in notable quantities into the filtered waters. We at once notified these companies, and with commendable promptness most of the companies improved their methods in so far that for some time past the average alum content of filtered water has been not more than one part per million. This amount is entirely negligible. So long as the alum process of filtration is used, by no practicable method can the filtered water be entirely freed from this substance. Some complaints have been made by boiler inspectors that

the free alum in filtered water was injurious to steam boilers. But it is apparent that such an infinitesimal proportion of alum in the water as we have named can have no appreciable effect upon the steel shells of boilers unless the boilers remain uncleaned for very long periods. Most unfiltered waters contain notable quantities of magnesia, soda and other substances which affect steam boilers injuriously. From these substances most of our filtered waters are almost wholly free.

Of the total number of water samples analyzed in the laboratory about one-third are physicians' samples of well-water from houses where typhoid fever has prevailed and where the well is suspected of being the source of the infection. Our earlier work in this line showed a most unfortunate condition of affairs, since the great majority of the samples received were badly polluted. During the last year, however, the majority of samples of well-water analyzed have been of very fair quality and free from fecal contamination. It is the general custom in villages and farm-houses to have an open privy or pit within one hundred feet of the house. Where flies abound they pass from the house to the privy and back, carrying upon their feet and frequently deposit upon food-stuffs small particles of fecal matter, which may contain the germs of typhoid. Such germs are excreted in enormous numbers by all typhoid patients and by convalescents for some weeks after recovery. It is both practicable and easy to use closed receptacles in privies, or to cover dejections as soon as deposited with dry earth, ashes or lime. Houses having waterclosets should have wire screen-doors to keep out flies. Finally, every house in which there is a case of typhoid should be required to use disinfectants freely upon all excrementitious matter and upon all elothing soiled by the patient.

Beginning in the summer of 1903 a vigorous campaign has been carried on by the Board of Health against the Hook-worm parasite. *Uncinaria Americana*. The presence of this parasite was first brought to the knowledge of the physicians of the State by Dr. C. W. Stiles of the United States Public Health and Marine Hospital Service, at the meeting of the State Medical Society in 1903. This loathsome and destructive parasite has been shown by our work to be present in all the counties of the State east of the Piedmont section. So far no sample of Uncinaria-infected feces has been received from beyond the Blue Ridge.

There is a constant all-the-year demand upon the laboratory for examinations of sputum from suspected cases of tuberculosis. The greater part of such samples received do in fact show the germ of tuberculosis. Tuberculous sputum is the most dangerous class of samples received at the laboratory. We are sorry to say that not a few physicians are so reckless as to send such samples in containers not authorized by the Board of Health and which are forbidden by United States law to be carried in the mails. Such physicians fre-

quently excuse themselves by saying they are in a hurry and cannot wait for the authorized mailing cases supplied by the Board for this use. These physicians seem to forget that there may be a hundred other physicians wanting similar work done, and all equally in a hurry. The rules of the Board of Health governing the laboratory, and the rules of the United States Post-office regulating the transmission of infectious matter through the mails, are very reasonable and are in fact necessary to safeguard the health of those who must handle the samples. The routine of our laboratory aims to treat every physician alike, and to take up samples in their regular order. Physicians who deliberately disregard our rules have only themselves to blame when their samples are consigned, unexamined, to the fire, Verbum sap, satis!

From the time when the public schools open in the fall until about May 1, the examination of throat exudates from suspected cases of diphtheria form a very considerable part of the work of the laboratory. The type of diphtheria prevalent in North Carolina seems to be of a very mild form, in so far that physicians generally refuse to diagnose the disease from the clinical symptoms. Most of the samples sent to the laboratory are labeled "Tonsillitis" or "Croup." Yet the great majority of these samples show the true Bacillus diphtheriw. The bacteriological process does not distinguish between virulent and feeble varieties of the germ.

Very few physicians who have secured a positive original diagnosis of *Bacillus diplitheriæ* send samples from the convalescent patient as recommended by the National Conference of State and Provincial Boards of Health in the following words:

"Resolved, That the isolation of any person affected with diphtheria or so-called laryngeal or mebranous croup, and of the nurse or nurses attendant upon such person, shall be absolute and shall be governed by the following regulations:

\* \* \* \* \* \*

"Whenever the presence of the *Bacillus diphtheriæ* is in any manner reported by an approved bacteriologist, the house should forthwith be quarantined and a plainly printed notice thereof, including the name of the disease, should be posted in a conspicuous place thereon, and guards stationed if necessary.

"After proper disinfection, quarantine shall be removed from those houses in which diphtheria has been diagnosed, when synchronous cultures taken from the noses and throats of all persons quarantined have been pronounced to be free of diphtheria bacilli by a bacteriologist approved by the State Board of Health.

"After the laboratory diagnosis of diphtheria has been given, it shall be the duty of the health officer to see that specimens from both nose and throat of the patient are forwarded by himself or the attending physician to a laboratory approved by the State Board of Health, once a week after clinical symptoms have subsided, until negative reports for both nose and throat are obtained."

It is probable that the spread of this disease in epidemic form is very largely due to the neglect of isolating the patient until the germ has disappeared from throat and sputum.

A comparatively small number of samples of blood are sent to the laboratory for examination for the parasite of malaria. Most of the samples received are free from the parasite. This seems to indicate that physicians either use quinine before taking the samples or else send only from cases of obscure continued fevers which are not malarial.

The laboratory receives a very few demands for the Widal test for typhoid. The Widal test is easily made, but for trustworthy results the culture of the typhoid bacillus used to agglutinate must be fresh and virulent. To procure and keep up such cultures requires too much labor for the trifling demand for this work, so at present we decline to make the Widal test.

The laboratory receives an occasional freak sample supposed to contain the "germs" of cancer or scarlet fever. While the biologist is always willing to give a brief answer to a courteous request, with our facilities already overtaxed, physicians must understand that no samples requiring special research can be accepted. The germs (if germs there be) of cancer and scarlet fever are not known to science. It is not the business of our laboratory to search for unknown germs.

With present facilities and lack of sufficient financial support, there is little prospect of broadening the scope of our work. With increased means the laboratory might, with great benefit, add to its present lines of work biological diagnosis of rabies and of pneumonia. It might also undertake to test the qualities of the drugs and medicines usually prescribed by physicians. Those States which have investigated the quality of drugs sold, especially in the smaller towns, have found a most alarming condition of affairs, For example: Massachusetts has found that practically all the "diabetic flour" sold in that State at about fifty cents per pound was little better than ordinary whole wheat flour. This is one of the most despicable impositions practiced upon a credulous and helpless public. All the medicinal wines were found to be spurious and most aromatics below standard strength. Unless the physician can depend upon the purity and strength of the drugs he prescribes, no amount of skill will avail to save his patient, and the reputation of the physician must suffer. This is a very serious matter and should have the earnest consideration of the Board of Health as well as of practicing physicians.

It is necessary to call your attention and the attention of the physicians of the State to the insufficient and precarlous support of the biological laboratory. There seems to be a loose impression among the profession that the whole power and wealth of the State is back of the laboratory and that the amount of work to be had for the asking is practically unlimited. The fact is that the State does

not contribute one cent to the support of the laboratory. Our sole source of income is the fees received from public water companies. These companies are supposed to get their work done at the actual cost, and if we consider that for an annual payment of \$60 each company receives twelve bacteriological analyses and four chemical analyses, it is apparent that there can be little profit to the laboratory.

The biologist has made free of charge for physicians and the general public during the last twenty months, \$50 analyses. It will be impossible to continue this work unless the State appropriate sufficient to cover the actual cost of this work. The laboratory needs at least \$1,500 per amum above what it earns in fees. With such State aid we will be able to continue our free work and to extend it by adding to our present list the biological diagnosis of rabies and some other diseases, and possibly we may give some attention to medicolegal work, as in examination of blood stains, etc.

The salary of the biologist is insufficient; he needs an assistant and a clerk or stenographer.

The biologist has for over a year accepted an excessive amount of work, being anxious to prove the practical value of bacteriological diagnosis as an aid to the practicing physician. This value has now been very fully demonstrated, and it seems to be the duty of the State or the public to provide for this work in the future.

All of which is respectfully submitted,

GERALD MCCARTHY, D. Sc.,

Dr. RICHARD H. LEWIS,

Biologist.

Secretary N. C. Board of Health.

# SANITARY INSPECTION OF STATE INSTITUTIONS.

## PUBLIC BUILDINGS.

#### THE CAPITOL.

THE COUNCIL OF STATE.

Gentlemen:—The undersigned, a committee from the State Board of Health, visited the Capitol Building and carefully inspected the property, so far as sanitary points connected with it are concerned. We respectfully suggest that the bath-rooms now in use should be ventilated. They are built under the stair-cases and are lighted by gas, and the water for bathing purposes is heated by an instantaneous gas heating apparatus. There is no proper ventilation for these rooms, and we respectfully suggest that this is not a sanitary arrangement, and one not conducive to the welfare of those who are to use these bath-rooms. A coat of paint or whitewash ever the walls of these rooms would certainly add much to their looks, and we respectfully think that it would make them healthier. In the Senate Chamber and the House of Representatives, we beg leave to repeat the warning that during the sessions of the Legislature, when both of these rooms are crowded by members of this body, and by persons in the lobby, fires should be kept in all the fire-places, to promote good ventilation of these rooms.

Yours very truly.

G. G. Thomas, M. D., Richard H. Lewis, M. D., Committee.

#### THE AGRICULTURAL BUILDING.

STATE BOARD OF AGRICULTURE,

Raleigh, N. C.

GENTLEMEN:—The undersigned, a committee of the State Board of Health, visited the Agricultural Building and inspected the plumbing and the sanitary arrangements generally in use about the building. Most of this plumbing is in the old building, and none of it appears to us to be first-class work. It is in as good shape, generally, as can be expected of plumbing of this character. We do not think the ventilation of any of the closets was properly looked after when the

plumbing was installed. We suggest that you have a competent plumber to go over the work and remodel that which is now rather badly constructed.

Yours very truly,

G. G. Thomas, M. D., Richard H. Lewis, M. D., Committee.

#### THE SUPREME COURT BUILDING.

THE COUNCIL OF STATE.

Gentlemen:—The undersigned, a committee of the State Board of Health, visited the Supreme Court Building and inspected the plumbing and the sanitary arrangements generally in use about the building. We beg leave to heartily approve the removal of the closets from the first floor of this building to the basement. This seems to be a move in the right direction. Generally speaking, the sanitary condition of this building is very good, but the closets, opening in the halls above, are entirely without any ventilation. Windows should be cut in the outside wall, both for light and air for these rooms. The building was clean, and we see no other recommendation to be made regarding the sanitary conditions.

Yours very truly,
G. G. Thomas, M. D.,
Richard H. Lewis, M. D.,
Committee,

## EDUCATIONAL INSTITUTIONS.

## STATE UNIVERSITY.

BOARD OF TRUSTEES.

University of North Carolina.

Gentlemen:—The undersigned, a committee from the State Board of Health, visited the University and have carefully gone over the sanitary arrangements of the institution. Generally speaking, these were found in excellent condition. The water supply seemed sufficient, and it has been reported of excellent character. From all reports received while there, we are convinced that this water supply will be most carefully protected from contamination, and will be ample for the purposes of the University.

The plumbing in the Carr Building appeared to us to be of poor character. It certainly needs careful overhauling, and in many places repairing. Slate floors, or some impermeable material, should

be placed under the urinals in the closets, as the floor is now badly soiled by the urine falling on it, and soaking in, and is a source of discomfort, and may be a source of disease. All these wooden floors should be replaced by marble or slate, with ample drainage for any overflow or dripping.

We respectfully eall your attention to the fact that the chemical laboratory and lecture-rooms are badly overcrowded, and the removal of the hoods to make room for students has affected the ventilation of the building. This is not only detrimental to the health of the students, but is taking away from the chemical department an opportunity to do the good work which has been so signally performed by it in the past. The graduates of this department have been in demand, and it will be a serious blow to the University to have any neglect of this department and impair the high grade of teaching which has so far marked the chemical work at the University of North Carolina.

Yours very truly,

G. G. THOMAS, M. D.,
RICHARD H. LEWIS, M. D.,
Committee,

#### STATE NORMAL AND INDUSTRIAL COLLEGE.

THE BOARD OF TRUSTEES,

State Normal and Industrial College...

Greensboro, N. C.

GENTLEMEN:—The undersigned, representing the State Board of Health, in accordance with section 3 of an act relating to said Board, made on the 15th inst. a sanitary inspection of the college under your charge.

It gives me pleasure to report that I found the institution in an excellent condition, from a sanitary point of view. Of the many water-closets scattered through the various buildings, all were as they should be, with a single exception in the partially occupied Students' Building. Its water supply was cut off, but it did not appear to be in use. The President, who was with me, made a note of it for correction. I note, however, in the lavatories of the Spencer Building that privacy was secured by opaque window-shades. They should be discarded and the windows painted or frosted, for light in abundance is especially desirable in such places.

I was pleased to note the continued use of the Forbes water sterilizers. The output on the second floor of the Spencer Building was not satisfactory as to quantity. I would, therefore, suggest the installation of an additional sterilizer of such capacity as to supply, not barely enough, but more than enough water. One of the chief troubles in the hygienic management of people—women especially—is to get them to drink water enough. The free and easy working of the vital functions is greatly helped by drinking large quantities of pure water. Its generous use, therefore, should be encouraged in every way.

The Infirmary is too small, I think—certainly incomplete—in that no provision is made for contagious diseases. Owing to the occurrence of three cases of diphtheria in the past few weeks the second floor was cut off from the remainder of the building for their accommodation, and in consequence the quarters for the ordinary sick were at one time overcrowded. This is, of course, inadmissible in the proper care of even the well, and ample provision should be made to avoid it. A separate building for contagious diseases should be erected, or an annex to the present Infirmary, connected by a covered way with open sides, should be built. A still better plan, if possible, would be to use the present Infirmary for other purposes and build a new one in a more retired part of the grounds.

The cold-storage plant, I was informed, is only rented—a temporary arrangement, no doubt due to lack of funds. It should be purchased, or, in any event, made a permanent fixture of the institution. It occasionally happens that under the influence of heat certain organic poisons, known as ptomaines, are developed in milk and meats and cause serious illness. This should be guarded against.

Very respectfully.

RICHARD H. LEWIS, M. D.

## COLLEGE OF AGRICULTURE AND THE MECHANIC ARTS.

THE STATE BOARD OF AGRICULTURE.

GENTLEMEN:—Having made a sanitary inspection of the College of Agriculture and the Mechanic Arts, the undersigned, appointed by the State Board of Health to make the inspection, beg leave, as required by the act relating to the Board of Health, to report to your honorable body as follows:

The sanitary condition of the College as a whole is good, and we found only one thing to criticise. We refer to the surface privy, the same, with the exception of the water-closets in the hospital, being the only convenience of the kind for the large student-body. As a surface privy it is well arranged and well cared for, but it is the method of disposal of human feces to which we object. For such an institution in this day of sanitary progress it is an anachronism. It is, however, as a possible source of disease that it is to be condemned. Typhoid fever is the one of all the more serious diseases to which the young adult is most susceptible. Most frequently it is conveyed by infected drinking-water, but its transmission by flies is now a well-established fact. As the College is a military school, the

most apt illustration we can suggest is the experience of our troops during the recent Spanish war. In some of our camps, notably at Chickamauga, typhoid fever became such a scourge that the government appointed a commission composed of three of the most distinguished sanitarians in the country to investigate the matter. After a most careful and thorough inquiry they reported the cause of the spread to be chiefly flies, excluding the drinking-water, which they found to be pure. The germs of the disease are found in the discharge from the bowels and bladder. The flies crawling over the surface of the pits infected their feet and afterwards planted them on the food in the kitchen and mess tents. Thousands of cases were caused in this way. On a smaller scale the same thing might happen at the College. In our opinion, in order to avoid this danger a system of sewerage should be installed and the surface privy abandoned.

GEORGE G. THOMAS, M. D., RICHARD H. LEWIS, M. D., Committee.

AGRICULTURAL AND MECHANICAL COLLEGE FOR THE COLORED RACE.

THE BOARD OF TRUSTEES,

A. and M. College for the Colored Race, Greensboro, N. C.

GENTLEMEN:—Having been designated by the State Board of Health for the purpose, I made a sanitary inspection of the College on the 15th inst. I found it in as good condition as the nature of the plant will permit.

I note the absence of any provision for taking care of the sick. This should be remedied by all means, by the erection of a separate infirmary, so that in case of the appearance of contagious disease the proper isolation could be carried out.

The bathing facilities could be enlarged to advantage, I think.

The surface privy, while apparently fairly well kept, should be abandoned and a system of sewerage substituted. This can be done at comparatively small expense by the method known as subirrigation, as most of the work could be done by the students themselves and the amount of sewer-pipe required would be small. I commend this matter to your careful consideration,

Respectfully,

RICHARD H. LEWIS, M. D., Secretary of State Board of Health.

SCHOOLS FOR THE DEAF AND DUMB AND THE BLIND, AT RALEIGH.

THE BOARD OF DIRECTORS.

Schools for the Deaf, Dumb and the Blind, Raleigh, N. C.

Gentlemen:—In compliance with the provisions of section 3 of an act relating to the Board of Health, the undersigned, a committee appointed by the said Board for the purpose, made on November 30th a sanitary inspection of the two schools under your charge. As we purposely avoided giving notice of the intended visit, the conditions found, we take it, fairly represent those usually prevailing.

## The School for the White Blind.

As regards the more important sanitary features—general cleanliness, water supply and plumbing—we found the school in excellent condition. We think, however, that it would be an improvement of the lavatory in the southern wing of the girls' building to transpose the bath-tubs and water-closets. The latter are now located in a small inside room without an opening upon the outer air, and is consequently dark and not properly ventilated, while the bath-tubs occupy quarters that are both well-lighted and ventilated. It is much more important that the former should have the benefit of an abundance of light and air than the latter.

We noted the very small and totally inadequate inside play-room for the children in bad weather. For reasons given in the concluding paragraph, this is a defect which should be remedied. This could easily be done by utilizing the basement, which is now so much waste space, the only thing required being a good concrete floor. This would also be an improvement on general sanitary principles, inasmuch as it would prevent the rising of the ground air which, from the health standpoint, is objectionable.

The arrangements for the sick, we think, could be much improved. Each of the rooms in the two wings of the girls' building set apart for the cases of ordinary sickness are too far from the general lavatories. A bath-tub and water-closet should be installed in the immediate proximity of each of them. This need is too manifest to require further discussion. But the crying need of the institution is some provision for the proper isolation of contagious diseases, and we earnestly repeat the recommendation in regard to this matter made by the committee of inspection two years ago. The third floor in the center of the main building, being cut off from other parts, except a stairway from below, is well located for the purpose and could easily be transformed into two wards, one for each sex. This should be done by all means. The State cannot afford to subject the most pitiable and helpless of its wards to the dangers of an epidemic of infectious and therefore preventable disease.

The rooms on the west side of the girls building are too dark. The number of windows is insufficient, and the trouble, especially on the second floor, is aggravated by the roof of the veranda. This defect should be remedied.

Leaving out other considerations, the blind, from a purely physical point of view, are heavily handicapped by their special infirmity. Except to a limited extent they are debarred from the active outdoor exercise which is so important to healthy childhood. They cannot romp and run and participate in athletic games, and in consequence they lack, as a class, the glow of vigorous health to be found in those blessed with sight. You have doubtless observed the pallor which generally characterizes them. For these reasons it is especially important that everything possible in the way of air and light and play-room should be provided for them.

## The School for the Colored Deaf and Blind,

We found both departments of this school in a most exemplary state of cleanliness, and those in charge are deserving of commendation. Some of the water-closets are of a rather antiquated pattern, but are in good working order and answer the purpose very well. The school as a whole is in excellent sanitary condition.

George G. Thomas, M. D., Richard H. Lewis, M. D., Committee,

## SCHOOL FOR THE DEAF AND DUMB, AT MORGANTON.

BOARD OF DIRECTORS,

School for the Deaf and Dumb, Morganton, N. C.

Gentlemen:—Having made a sanitary inspection of your school, in compliance with the act relating to the Board of Health, the undersigned committee from said Board take pleasure in reporting that they found everything in excellent condition.

We would suggest, however, the advisability of changing the brick floor of the basement to one of concrete as soon as practicable. While not unsanitary, it is a source, we were informed, of much dust which finds its way to the floor above,

Very respectfully,

George G. Thomas. M. D., Richard H. Lewis, M. D., Committee,

## OXFORD ORPHAN ASYLUM.

BOARD OF DIRECTORS,

Oxford Orphan Asylum.

Gentlemen:—The committee from the State Board of Health visited the Oxford Asylum and made a careful investigation of the sanitary condition of the property under your charge. It affords us great pleasure to report that we found the buildings in excellent condition, so far as the sanitary arrangements were concerned. The cleanliness was so marked a feature as to excite our unstinted admiration. We nowhere found any evidence of neglect of the premises or want of daily care of all the property under the control of your Superintendent, Colonel W. J. Hicks, and his efficient helpers. The children bore the evidence of the well-directed care which is exercised over this institution.

We wish, however, to call your attention to two points which seem to us of marked importance: We found that everywhere the children were sleeping two in a bed, and it is with great earnestness that we advise you to separate these children, giving each one a single bed. This is a suggestion which is the result of long observation among those best fitted to judge of such necessities. Evil habits of pronounced character are often begotten in dormitories where two children sleep together. The presence of a bad child in a dormitory may work an amount of mischief which may be of serious detriment to the future lives of these little ones over whom you are otherwise exercising such beneficent care. We respectfully submit that the present air supply in these sleeping-rooms is hardly sufficient, and if possible, it would be well to scatter the children more. found it, the air supply was not over 255 cubic feet per head, being less than half of the minimum amount supposed to be necessary for the best health in sleeping-rooms. With the exception of the two above-named exceptions, this committee wishes to express again its great satisfaction at finding a charity of this sort so administered as to bring happiness and health to the inmates of the institution, and to insure among these helpless little ones, not only comfort during their stay, but a feeling of admiration, which is the outgrowth of gratitude, toward the institution which gave them an opportunity to become useful men and women.

Yours very truly,

G. G. THOMAS, M. D.,
RICHARD H. LEWIS, M. D.,

Committee.

## ASYLUM FOR COLORED ORPHANS.

BOARD OF DIRECTORS.

Colored Orphan Asylum, Oxford, N. C.

Gentlemen:—The committee from the State Board of Health visited this institution and found everything under the control of your Superintendent, Rev. Mr. Shepherd, well cared for. The house was clean and the children looked to be in good condition. Little or no sickness was reported, and there was every evidence of a thorough disposition to do the best for the inmates of the institution, under the care of the Superintendent and his corps of teachers and helpers. While it is not strictly a part of our inspection to look after the furniture in these buildings, we would respectfully recommend that these buildings be supplied with new bedsteads and mattresses, as they seem to be in bad shape,

Yours very truly,

G. G. THOMAS, M. D.,
RICHARD H. LEWIS, M. D.,
Committee,

## STATE HOSPITALS FOR THE INSANE.

## CENTRAL HOSPITAL, AT RALEIGH.

THE BOARD OF DIRECTORS.

State Hospital for the Insane, Raleigh, N. C.

GENTLEMEN:—The undersigned, assigned by the State Board of Health to this work, have made a sanitary inspection of the hospital, and respectfully beg leave to report:

We found the institution clean and in excellent sanitary condition. We would note, however, two wants, the supply of which would, in our opinion, conduce to the healthfulness of the patients.

One of these is the want of verandas, enclosed, of course, with wire netting. Fresh air and sunshine in abundance are of the first importance, from the health point of view, to all persons, especially to children and invalids. The insane are below par in physical as well as mental health, and as the condition of many of them requires restraint of their liberty, they are debarred from outdoor exercise. Wire-enclosed verandas in good weather would in effect be outdoor wards and therefore of great benefit to many of the patients. We would recommend the constructions of such verandas on the west side of the hospital.

The other want is the lack of provision for the isolation of tuberculous patients. The transmissibility of tuberculosis is thoroughly established, the chief avenue of transmission being the sputum. The

proper care of the sputum in this class of patients is simply out of the question, and the danger of infection is, therefore, much greater than it would be among sane people. This is a crying need that should be met at once by the establishment of a special colony for the tuberculous, or by such other method as in the judgment of your honorable body would best solve the problem.

Very respectfully,

GEORGE G. THOMAS, M. D., RICHARD H. LEWIS, M. D., Committee.

#### STATE HOSPITAL, AT 'MORGANTON.

BOARD OF DIRECTORS,

State Hospital, Morganton, N. C.

GENTLEMEN:—The undersigned, representing the State Board of Health, having made a sanitary inspection of the Hospital, beg leave to report:

We found the institution in excellent sanitary condition. There is, however, in our judgment, a serious defect in the arrangements, and that is the lack of some provision for the isolation of the tuberculous patients. In view of the well-established fact of the communicability of the disease through the sputum and the manifest impossibility of securing its proper care from the irresponsible insane, it is particularly important that such provision should be made for them.

We were much pleased with the colony for men and believe this arrangement will be materially helpful to the general health and *ipso facto* to the special malady of its members. We would recommend the extension of this plan as far as possible.

Very respectfully,

George G. Thomas, M. D., Richard H. Lewis, M. D., Committee.

## STATE HOSPITAL, AT GOLDSBORO.

To the Board of Directors,

State Hospital, Goldsboro, N. C.

Gentlemen:—On October 27th, without previous notice to your Superintendent, we, a committee of the State Board of Health, made a sanitary inspection of the Hospital under your care. We respectfully beg leave to report as follows:

The economy and efficiency used in the management of the institution are unmistakable, as shown by the small annual per capita expenditure, the valuable enlargement and improvement of plant in many respects, and the fairly low death-rate of the immates as compared with that of other hospitals for the colored insane.

The arrangements for the preparation and preservation of food was found to be admirable; the newly added cold-storage, dancing-hall, dining-room, as well as other improvements, displayed wise and needful investments of the State funds.

The floors to the halls and most of the wards, made clean by frequent dry-sand scourings, and the walls made white by periodic applications of liquid lime, together with the remarkable absence of dust, gave evidence that neatness and cleanliness were conditions striven for by Dr. Miller and his subordinates.

While, therefore, the buildings and the management are in many respects a credit alike to them and the State, the sanitary condition is not ideal, is not above reasonable criticism.

The white floors, made of soft and inferior wood, certainly in the main building, are worn and rough in many places and further marred by large dirt-filled cracks.

With insane people for your population, such floors must sooner or later, in spite of all effort, become contaminated with feces, sputa, urine and other elements of filth.

Floors made of hard wood properly polished, and with periodic applications of enamel paint, would be well-nigh non-absorbent, easily washed and in every way more healthful.

Walls with smooth hard finish, properly painted, suited to disinfectant sprayings, washings and fumigation, are much to be preferred from a sanitary standpoint.

The mortality in your Hospital for the last twelve months, as we are informed, is a fraction less than 7 per cent., which is much lower than it was last year, and even lower than is usual among the colored insane of other asylums. While it is gratifying to know this, it is a fact sad to realize that *one preventable disease*—tuberculosis—is responsible for about 30 per cent. of this death rate. Two years ago our report showed quite 35 per cent. of your mortality was due to the same cause.

As is known, doubtless, to most if not all of you, tuberculosis is a contagious disease. As a contagion it is slow in its onset, and can, with proper precaution, be avoided even in close proximity with its victim. Its contagion is closely associated with the home, the hospital and the prison. An inclosure of some form is necessary to make it effective. "The house is the granary of the tubercle bacillus. It is the place in which tuberculous matter is kept vital until the bacillus can find a new host." The increasing susceptibility to consumption among the negroes of the South seems to be a well-established fact.

According to recent report, at the autopsies on all negroes dying in the Georgia Insane Asylum in 1901, over 50 per cent, gave unmistakable evidences of the presence of this disease,

The relation between *consumption* and *insanity* in the negro is, from the very nature of things, a question of much interest to your Board. The evidence at our command seems to point to the idea that insanity, in most instances, precedes the onset of consumption.

Granting the truthfulness of these propositions, the freest possible ventilation of the wards, with the greatest liberty to outdoor life, are matters of the highest concern to the well-being of your population.

Besides these precautions, we are assured by your Superintendent that systematic bichloride washings and formaldehyde fumigation is practiced in infected wards. To our minds, the most effective method left you whereby you may greatly diminish this heavy sacrifice of life is that of complete separation of the tubercular patients from the other immates. Such a course was urged in our former report. We are glad to know that Dr. Miller, by means of a little profit realized from brick-making, has been enabled recently to effect such an arrangement among the female patients. There still remains several tubercular patients closely associated in every-day life with 217 male immates. Surely our legislators will not longer remain indifferent to your needs for the proper removal of this evil condition.

With but a few exceptions, the defective closets in the sewerage system, to which your attention was called in a former report, have been replaced by splendid automatic flushing closets. The further expenditure of a very small sum will give an ideal condition on this line. When the filthy and mischievous habits of many of your inmates are remembered this becomes a matter of no little importance.

In our report of two years ago we called attention to imperfections in the water supply. As the same conditions prevail now as then, we again call attention to matters discussed in that report; except that we are informed by the management that the well near the stables continues to afford good water, as determined both by practical use and by occasional analyses. Two years more of use of this water with good results causes us to be less apprehensive of it, yet we regard it as a possible source of infection, and if used should be analyzed from time to time.

Respectfully,

Francis Duffy, M. D., J. L. Nicholson, M. D., Committee.

## TUBERCULOSIS.

Tuberculosis, usually appearing in the pulmonary form and then popularly known as consumption, is the most fatal disease in North Carolina as it is in other parts of the civilized world. Since its organization the Board of Health has been working in a general way to prevent its spread, but no special concentrated effort to secure its prevention has been made until the present year. The Secretary of the Board, in his annual report made to the conjoint session of the Board with the State Medical Society at its meeting in Raleigh in May last, called particular attention to the importance of the subject and the difficulties appertaining to the solution of the problem, and earnestly requested of the physicians suggestions as to the best methods of procedure. The interested reader is referred to this report and the suggestions made in its discussions, which will be found on preceding pages.

The execution of the campaign was delegated to the Secretary, who gave it most careful consideration before taking action. The fundamental object to be obtained was the education of the people. The most effective way of reaching the people he believed to be through the family physician, whose immediate personal advice and influence would be worth all other agencies combined. For the purpose of this educational work a six-page pamphlet on "The Causes and Prevention of Consumption" was carefully prepared, special pains being taken to make it concise, yet essentially complete; positive and definite, yet plain and simple, and, notwithstanding the handicap, to make it, if possible, interesting. The pamphlet will be found below.

But the mere distribution of literature is not enough. A most important part of the problem is to secure the reading of it. To secure that end as far as possible by interesting the

recipient enough to get him to read the pamphlet, a series of letters addressed to different special classes of the people asking, in addition to the perusal of the article, the interested co-operation of the reader in securing its wide distribution and in general helping to stir up an interest in the subject, were prepared. A copy of these letters was and is to be mailed with each pamphlet, for the distribution is by no means finished, only about 25,000 having so far been sent out. The first was sent to all the newspapers in the State that it might be widely advertised. The response on the part of the editors was encouraging, and as a result much interest has been excited and the call for the pamphlet has been very gratifying, the demand not being limited to our own State, but extending from Indiana to Texas. The other letters are respectively to physicians, ministers, school-teachers of both races, managers of various enterprises having numbers of emplovees, and to the general public. The greatest interest in this work has so far been shown by ministers of the gospel, many undertaking to distribute the pamphlet by the hundred. In order to set forth fully the scheme adopted by the Board in its campaign against consumption, these letters are also printed below.

It will be noted that a special letter was prepared for the colored teachers. This was deemed necessary for the reason that consumption is much more fatal to the colored than to the white race, the death-rate, so far as our limited mortuary statistics show, being in the proportion of about two and a half to one. Besides, owing to their ignorance and poverty as a class, to their habits and environment and the difficulty of reaching them except through the leaders among their own people, special efforts in their behalf are required. In fact, the colored element in our population greatly enhances the difficulties of successfully solving this, the most stupendous task, under the most favorable circumstances, which confronts the sanitarian. It is our hope, however, that something can

be done through the physicians, ministers and teachers of their race.

It is not the intention of the Board to limit its efforts against tuberculosis to this method, but as far as possible to avail itself of others that are useful, such as the organization of anti-tuberculosis societies in our cities and towns, the securing of public addresses on the subject, and when it becomes feasible the establishment of a special sanatorium for consumption. These latter methods, while helpful, are necessarily very limited in their scope, but by the free use of printer's ink and postage stamps we hope at comparatively small expense to plant the seed of knowledge of this subject in every neighborhood in the State, in the confident belief that it will bring forth fruit.

But after all is said, the family physician remains the most effective agency in the solution of the problem, and by repeated appeals directly to every individual practitioner in the State we hope to arouse and keep alive his interest and secure his active co-operation.

## CAUSES AND PREVENTION OF CONSUMPTION.

(Tuberculosis, Phthisis, Pulmonary Consumption).

Pulmonary tuberculosis (consumption) is the most common form of tuberculosis, about 95.5 per cent, of all kinds, it is said. The other principal forms of tuberculosis are scrofula (of the glands), white swelling (of the bones and joints), and lupus (of the skin). These are milder in character, and not so dangerous as the pulmonary form

Consumption is the most fatal of all diseases and is aptly called "The Great White Plague." It is estimated that one-seventh of all deaths from every cause in the civilized world are due to it. One-fourth of all who die in adult life—the most useful period—it is said, are the victims of this disease. In North Carolina, according to the last census report, about one-tenth of all deaths were attributed to consumption. In other words, between four and five thousand of our people die every year of a disease that can be prevented.

#### CAUSES.

It is a communicable disease, which means that it is transmitted from one case to another. The essential element in the transmission is a germ known as the *tubercle bacillus*, an extremely minute rod-like body, one-ten-thousandth of an inch long and one-fifty-thousandth of an inch in thickness. In common with all communicable disease, it is a *preventable disease*.

The causes of consumption are of two classes, predisposing and exciting.

Predisposing Causes.—In every constitution there is, in varying degrees, a certain power of resistance to the inroads of disease germs, most pronounced in those in vigorous health. While it may be said that the disease itself is very rarely if ever inherited, the lack of this resisting power, just as any other constitutional peculiarity, is inherited, hence the great susceptibility of those belonging to consumptive families. This is greatly increased by intermarriage between such, But resistance is weakened by lowered which should not occur. vitality from any cause, as insufficient and impure air from overcrowding, especially in dark, damp, sunless, poorly ventilated apartments; insufficient or improper food; other diseases of a wasting character, as dyspepsia and typhoid fever, for example; overwork, worry, dissipation, etc. It is a mistaken notion that alcohol is a preventive or curative of consumption. The habitual user is an easier victim. As about three-fourths of the nourishment of the body is furnished by the oxygen taken in with the air breathed, a deformed or imperfectly developed chest, with the corresponding deficiency of lung expansion, is a predisposing cause. For the same reason, those having normal chests but who do not expand them by exercise in the open air are more susceptible. The improved general health of the people resulting from the advance in hygiene, and the outdoor life that has come to be largely the vogue in recent years, is doubtless to no small degree responsible for the marked reduction in the deathrate from consumption.

Exciting Cause.—The Tubercle Bacillus. This is found, with the exception of infected meat and milk, which we believe to be rare sofar in our State, only in the pus or matter thrown off by a tuberculous patient in the sputum or spit from the diseased lungs, or discharged in the other forms of tuberculosis. It is said that the number of the bacilli or germs thrown off in twenty-four hours in the advanced stage mount up sometimes into the billions. The sputum, therefore, is the chief source of the poison, and consequently its management is the most important item in the problem of the prevention of consumption. Although the germs may find their way into the system by being swallowed in infected food, tuberculous milk or meat, or eatables over which flies fresh from sputum have crawled, from kissing a consumptive on the lips, by putting infected articles in the mouth,

as for example, coins that have been handled by a consumptive, etc., they are generally taken in with the breath in the form of dust. As long as the spit remains moist it is innocent in this regard, as the germs cannot be dislodged and floated into the air. For the same reason the breath of a consumptive is not dangerous, but the germs are sometimes found in the fine spray of saliva expelled to a distance of several feet in coughing, sneezing, loud talking and laughing. The germs cannot live for any length of time exposed to sunshine, fresh air, and rain. They retain their vitality sometimes for months when protected from these agencies. Consumption is therefore essentially a house disease. In a room occupied a large part of his time by a consumptive, the germs are not only more abundant but more persistent in action than elsewhere, and the darker and more badly ventilated the room the more so. Moreover, persons who live an indoor life are more susceptible.

### PREVENTION.

From what has been said above, the following specific rules of conduct are deduced:

The sputum or spit of a consumptive should always be destroyed before it can dry and assume the form of dust. Indoors he should spit directly into the open fire, if there be one, or into a spittoon or spit-cup containing some disinfectant, 5 per cent, carbolic acid, 2 per cent. formaldehyde or one to two thousand corrosive sublimate. Plain water would be much better than nothing, as it would keep the sputum moist and for so long a time innocuous. The contents of the spittoon should be burned or buried and the vessel scalded with boiling water. Away from home, especially in public places of all kinds. he should religiously abstain from spitting on the floor or the sidewalk. He should always use some form of pocket spittoon, of which there are many varieties that can be obtained at a trifling cost, or expectorate upon pieces of rag or soft paper, which should be kept wrapped up in paraffin paper or other impervious material until they are burned. He should never spit into his handkerchief, lest the dry sputum be distributed in the air when he pulls it out.

Special care should be taken not to soil the hands, face or clothing with the sputum.

A consumptive should never cough, sneeze, talk loudly or laugh towards any one near at hand, but turn away his face, or hold his handkerchief in front of his mouth.

No consumptive should ever be kissed upon the lips—better not at all. Regard for the safety of his dear ones ought to make him refuse absolutely to be kissed.

Persons waiting upon consumptives should wash their hands frequently, always before eating. They should abstain from sharing

with them articles of food sent to their rooms. They should, of course, keep constantly in mind the rules of prevention.

The tuberculous patient should have his own toilet articles, tableware and linen, and no one else should use them. In cleansing them they should be boiled, or at least washed with boiling water.

His underclothes, night-clothes and bed-linen should never be mixed with the linen of the family, but immediately upon removal be dropped into a tub of water and kept wet until they can be boiled and washed.

His room should be as airy and bright with sunshine as possible, having a southern exposure when feasible. It should be kept thoroughly ventilated with at least one window open day and night, winter and summer. It should be simply furnished, without carpet, curtains, furniture upholstered in cloth of any kind—all dust-catchers, in short. It should never be swept or dusted, but wiped with a damp cloth, which should immediately afterwards be burned, boiled, or soaked in a disinfecting solution.

No one, if it can be avoided, should sleep in the same room with a consumptive, never in the same or another bed very close to his. Besides the risk of catching the disease, the second person would consume a large part of the oxygen of the air which he so much needs.

Children, who have a habit of handling everything and putting their fingers in their mouths, ought not to be allowed in the room. This applies with special force to the crawling age.

A room vacated by a consumptive should never be occupied by another until it has been disinfected. Renters ought to refuse to take a house in which such a patient has lived until this has been done. In cities the municipal authorities should require the immediate disinfection of every house from which one dead of consumption has been buried. It would be best for the city to have this done by its own officials trained in the work. In order to reach these cases every town should forbid the burial or removal of any corpse except upon the presentation of a death certificate stating the cause of death, signed by the attending physician. Progressive towns do this any way in order to make an accurate record of their vital statistics.

A consumptive house servant or dairy hand is a source of danger that can and should be avoided. It would work no hardship, for a different life would be better for the patient. This warning applies especially to the South, for the reason that the disease is very much more prevalent in the colored than in the white race.

The outer clothes of a consumptive and the woolen skirts of all women which have trailed over the floors of infected houses, of public halls, of street-cars and over the sidewalks should be brushed out-of-doors, and the brusher should avoid, as far as possible, inhaling the dust, always breathing through the nose. Dark petticoats, often

tucked or flounced at the bottom, which are never washed and which accumulate filth month after month, are very objectionable.

The danger from tuberculous meat is slight because the germs are killed in cooking, but it is much greater from milk which is taken raw, and which, besides, is more liable to infection. Milk from a cow with a diseased udder should never be used. Cities and towns ought to require of every dairyman selling milk to their people a license granted only upon the observation of the proper sanitary rules, including the tuberculin test, and revocable upon violation of these rules.

Every municipality should adopt and enforce an ordinance against spitting on the sidewalks and on the floors of public places.

Compulsory notification would be very helpful, especially in the case of the very poor.

It is the plain duty of every consumptive, to his loved ones and the public, once in possession of the facts above set forth, to observe all the precautions laid down, and of those intimately associated with him to see that he does it.

It is likewise the duty of every physician to see that these facts are impressed upon his consumptive patients and their families. The interested co-operation of the attending physician is by far the most important element in the solution of this difficult and dreadful problem. Without it comparatively little can be done, with it wonders can be accomplished.

It should be borne in mind that a consumptive taking the precautions above set forth in the management of his sputum is not at all a source of danger to others, and need not be avoided. It would be unnecessary cruelty to treat him like a leper. But his friends should see that he does take the precautions.

### OFFICES AND SHOPS.

In business offices, shops, factories, or any other places where a number of persons are shut indoors together, the danger of infection is increased. The managers of such offices or factories, for their own protection as well as that of their employees, should see that the proper precautions are observed. Free ventilation should be had and a rigid anti-spitting rule should be enforced. Spittoons containing water under all circumstances, and a disinfectant if there be present a known case of consumption, should be provided and their invariable use insisted upon. Book-keepers should never moisten the finger to turn a page. The Michigan Board of Health reports twenty successive cases of consumption in one office in Detroit as originating from one case who had this habit. The germs were found on the leaves of the books. His successors picked them up and put them into their own mouths, or scattered them in the air as dust in turn-

ing the leaves and inhaled them. No individual having a cough ought to use the common drinking cup, but use his own exclusively.

Provision should be made in all hospitals for the insane and in prisons for the separation of the tuberculous from the otherwise healthy. The utter helplessness of the inmates makes this an imperative demand of humanity.

#### A WORD AS TO TREATMENT.

Tuberculosis, if taken in time, is one of the most curable of chronic diseases. In the first stage, before the lungs begin to break down, there is no expectoration, no pus or matter containing germs is thrown off, and it is not contagious. In this stage it can be cured by proper care in the majority of cases. It is therefore all-important to the patient and the public, his immediate family in particular, that the diagnosis be made as early as possible. To this end, any person suffering from a general decline in health, especially if marked by a gradual loss of flesh, loss of appetite, a slight morning cough, feverishness, and perhaps huskiness of voice towards evening, should seek medical advice without delay. There seems to be a tendency on the part of both the patient and his friends to resent the suggestion that he has consumption, to deny it, and perhaps to discharge his true and candid physician—and lose the golden opportunity of cure. He should accept and act upon it at once—with hope.

The modern treatment of tuberculosis, which has been so successful, consists not in the use of drugs to any considerable extent, but in fresh air at all times, day and night, an abundance of highly nutritious food (rich milk, eggs, good beef, etc.), and a well-ordered life in accordance with the principles of hygiene. The consumptive should beware of patent medicines or over-confidence in any drug, lest the chance of cure be lost while leaning on a broken reed.

The success of the treatment is chiefly in the hands of the patient himself. A resolute will, a cheerful spirit, and obedience to discipline will overcome the disease in very many cases.

Copies of this Bulletin will be gladly furnished free to any one who will ask for them and distribute them.

Issued by the North Carolina Board of Health.

RICHARD H. LEWIS, M. D.,

Secretary.

George G. Thomas, M. D.,

President.

## LETTERS SENT WITH THE PAMPHLET.

## TO EDITORS OF NEWSPAPERS.

To the Editor:

My dear Sir:—The State Board of Health proposes to inaugurate a vigorous campaign against the most fatal of all diseases, pulmonary consumption. It is a preventable disease, Ignorance of its causes and of the proper methods of its prevention is in large part responsible for its spread. For the information of the people on these points we have prepared and had printed for general distribution twenty thousand copies of the enclosed pamphlet. The problem is to get it before the people. For the accomplishment of this no agency can be compared with the press. I therefore write to ask your most valuable co-operation in this work for suffering humanity. Your help would almost surely be the means of saving some—probably many—lives. Will you not give it by calling attention to the pamphlet and by advising those of your readers interested in the subject, especially such as have consumption in their families, to send a postal card to the undersigned for as many copies as they will distribute?

Very truly yours,

RICHARD H. LEWIS, M. D.. Secretary.

### TO PHYSICIANS.

My dear Doctor:—You have probably already seen in our last Monthly Bulletin a statement of the intentions and plans of the Board of Health in regard to the prevention of tuberculosis, including the article on the subject, which it is proposed to circulate as widely as possible among the people. Those whom it is most important to reach are the consumptives themselves and their families. A fundamental element in the problem is to locate these. This can practically be done only by our physicians, who, in their visitations to all classes, high and low, rich and poor alike, must know of the existence of nearly every case of consumption in the advanced and dangerous stage. Knowing and treating these cases, they can, without any trouble, put this pamphlet into the hands of those affected. By so doing they would be the means of accomplishing great things in preventing the spread of this most fatal disease.

Now, Doctor, we ask your invaluable aid in this work. We believe you will give it, for every physician worthy of this profession must be always glad not only to cure disease, but also when in his power to prevent it.

I enclose a copy of the pamphlet as printed for distribution. Please let me know how many copies you can use, or send me the name and address of the householder of those families in which consumption exists (in confidence), and I will mail one to each of them. Let me beg of you also to impress, by your own word of mouth, the importance of taking the precautions laid down. Your personal advice would be more weighty than any publication.

Very truly yours,

RICHARD H. LEWIS, M. D., Secretury.

#### TO MINISTERS.

REV. AND DEAR SIR:-I enclose herewith a pamphlet on "The Causes and Prevention of Consumption," published by the State Board of Health for wide distribution among the people, in the hope of staying, to some extent at least, the ravages of this the most fatal of our diseases. The problem is how to get it into the hands of the people, especially of consumptives and of families in which the disease is present. Next to the physician, the minister of the Gospel is in more immediate relation with the sick and suffering than any other. There are more than 2,500 ministers in the State. If we can secure their sympathetic co-operation in this work for humanity we believe that it will be most helpful. Ministers as a class are not only public-spirited citizens, but as a result of their holy calling their hearts are especially attuned and responsive to the cry of distress, physical as well as spiritual. We therefore believe that we can count on your help in this work, and we ask it. You can best render it by giving a copy of the pamphlet to all the consumptives in your congregation and by discussing the question with your people publicly and privately. Ignorance of the causes and of the proper methods of prevention is chiefly responsible for the spread of the disease. And how can the people hear without a preacher?

Upon receipt of a postal eard stating the number you can use, I will send them to you with pleasure.

Very truly yours,

RICHARD H. LEWIS, M. D., Secretary.

### TO WHITE TEACHERS.

To the Teacher:

The State Board of Health is making an effort to prevent, as far as possible, the ravages of pulmonary consumption—the most fatal of all diseases. The method adopted is the wide diffusion among the people of information as to the best way to do this. To that end a pamphlet, setting forth in a simple manner the proper course to be pursued, has been prepared, a copy of which I enclose.

The teacher, through the children, is in relation, more or less direct, with nearly all the people in his or her school-district and, by inquiry of the pupils, can ascertain the families in which there is a case of sickness characterized by a cough. Having done so, she could send a copy of the pamphlet to the family by the child. Will you not make this inquiry, and let me know on a postal card how many copies you can use? Upon its receipt I will mail them to you without cost, and will add as many more as you will distribute to those interested, whether sick or well.

In reading the pamphlet you will note that one of the most important things in the prevention of consumption is the building up of the general health, or in keeping strong and well. This requires an observance of the general laws of hygiene, the most important of which are indicated in the pamphlet.

Scrofula in its various forms is a mild form of tuberculosis. Pale, flabby, listless children with running nose or ears, or who breathe through the mouth, if not actually scrofulous, have a tendency to that disease or toward true consumption later in life. It is, therefore, especially important that such children should enjoy to the full fresh air, sunshine and simple but nutritious food. Outdoor sport should be encouraged for all children, and, therefore, every school should have its playgrounds.

You can assist in educating the people in regard to consumption by talking about what you have read in the pamphlet as well as by distributing it. Will you not lend your valuable aid to this most important work? Write me.

Very truly yours,

RICHARD H. LEWIS, M. D., Secretary,

## TO COLORED TEACHERS.

To the Colored Teacher:

Pulmonary tuberculosis, or consumption, as it is commonly called, has come to be the bane of the colored race. It is the most fatal of all diseases to every race, but it is especially so among the colored people, being nearly three times as fatal to them as to the whites. It is, therefore, especially important to your people that every effort should be made to check the ravages of this dreadful disease. Being a contagious disease, it can be prevented by following carefully the directions which are fully set forth in the pamphlet on the subject issued by the State Board of Health, a copy of which I enclose.

In this matter the colored people, as a whole, can be reached only by the more enlightened of their own race. We must depend, therefore, upon their ministers and teachers, the number of colored physicians being quite limited. As you are in relation with the people in your school district through their children, and doubtless have their confidence, you can be of great service in this work—by sending the pamphlet, by the children, to those who can read, and by telling the illiterate about it. It is desirable that all the people should possess the information contained in the pamphlet, but particularly those families in which there is a case of the disease. In repeating the instructions, I would suggest that you emphatically condemn the habit of sleeping with the head covered and, with even greater emphasis, dwell upon the vital importance of properly caring for the sputum, or spit. Carelessness and a want of cleanliness in relation to the expectoration is the chief cause of the spread of consumption.

I bespeak your cordial co-operation in this work of humanity. It carries with it no pecuniary reward, but the consciousness that you had been of service to your people would repay you. Make a careful estimate of the number of pamphlets you can use to advantage, notify me on a postal card, and I will mail them to you without cost.

Respectfully,

RICHARD H. LEWIS, M. D., Secretary.

#### TO THOSE CONTROLLING EMPLOYEES IN INDOOR PURSUITS.

DEAR SIR:—The State Board of Health is making a special effort to check as far as possible among our people the ravages of consumption, our most fatal disease.

I enclose a copy of a pamphlet on its causes and prevention and ask your careful reading of the same, especially of the paragraph addressed particularly to you. I also bespeak in the interest of yourself as well as of your employees your cordial co-operation in this work we are trying to do for humanity.

I would be pleased to send you as many copies as you will distribute,

Very truly yours,

RICHARD H. LEWIS, M. D., Secretary.

#### TO THE GENERAL READER.

My DEAR SIR:—I enclose a copy of a pamphlet on "The Causes and Prevention of Consumption," which the Board of Health has prepared for general distribution, and ask you to read it. Having read it, we would thank you to hand it to some consumptive or to the head of some family in which the disease is present. We would also be pleased if you would discuss the subject with your associates, and in that way assist in spreading the information.

Tuberculosis is the most fatal of all diseases, and at the same time is preventable. The chief cause of its spread is ignorance of its cause and of the best methods of preventing it. The hope of the Board is to dispel this ignorance, in part at least, by sending out this pamphlet and by still wider distribution of the information it contains through the help of the newspapers and by word of mouth on the part of those who read it. Will you not aid us in this effort to save our people, as far as possible, from suffering and death?

We would be more than glad to send the pamphlet to any one desiring it. A postal card to the undersigned would represent the cost and trouble.

Yours very truly.

RICHARD H. LEWIS, M. D., Secretary.

# UNCINARIASIS OR HOOK-WORM DISEASE.

Since our last report work new in character and valuable in results has been inaugurated and vigorously prosecuted, viz., a campaign against what is known as hook-worm disease. What are known as "dirt-eaters" are victims of this disease, abnormalities in appetite being one of the symptoms. This intestinal parasite, being a blood-sucker, we now know is the source of the trouble with those pale, flabby, listless people, especially children, we so often see in our country districts, and not so much soda-biscuit and fried meat as we once thought. It no doubt also explains in many instances those cases of anæmia and weakness among the young operatives in cotton mills about which so much has been said—the operatives coming from the country bringing the disease with them.

While the hook-worm has been known in Europe for about fifty years, it was not until 1902 that a species indigenous to the Southern section of this country was discovered and demonstrated by Dr. Charles Wardell Stiles, Chief of the Department of Zoology in the United States Public Health and Marine Hospital Service. The following is a summary of Dr. Stiles' report on the subject:

### SUMMARY OF DR. STILES' REPORT.

Convinced from theoretical deductions that hook-worm disease (uncinariasis) must be more or less common in the South, a trip was made from Washington, D. C., to Ocala, Fla., stopping at penitentiaries, mines, farms, asylums, schools, and factories, and the fact was established that the chief anamia of the Southern rural sand districts is due to uncinariasis, while clay districts and cities are not favorable to the development of this disease.

In the Old World, hook-worm disease was probably known to the Egyptians nearly three thousand five hundred years ago, but its

cause was not understood until about the middle of the nineteenth century, when it was shown to be due to an intestinal parasite, Agchylostoma duodenale. Until 1893 no authentic cases of this disease were recognized as such in the United States, but between 1893 and 1902 about thirty-five cases were diagnosed. In 1902 it was shown that a distinct hook-worm, Uncinaria americana, infests man in this country, and this indicated very strongly that the disease must be present, although not generally recognized. It is now established that in addition to the few cases of Old World hook-worm disease imported into the United States, we have in the South an endemic uncinariasis due to a distinct cause, Uncinaria americana. This disease has been known for years in the South, and can be traced in medical writings as far back as 1808,\* but its nature was not understood. \*Some cases have been confused with malaria, others have been attributed to dirt-eating.

The hook-worms are about half an inch long. They live in the small intestine, where they suck blood, produce minute hemorrhages, and in all probability also produce a substance which acts as a poison. They lay eggs, which cannot develop to maturity in the intestine. These ova escape with the feeces and hatch in about twenty-four hours; the young worm sheds its skin twice, and then is ready to infect man. Infection takes place through the mouth, either by the hands soiled with larvie or by infected food. Infection through the drinking water may possibly occur. Finally, the larvie may enter the body through the skin and eventually reach the small intestine.

Patients may be divided into light cases, in which the symptoms are very obscure; medium cases, in which the anemia is more or less marked, and severe cases, represented by the dwarfed, edematous, anemic dirt-eater. Infection occurs chiefly in rural sand districts. Above the frost line the symptoms are more severe in summer than in winter, and whites appear to be more severely affected than negroes. Persons who come in contact with damp earth are more commonly infected than others; so that the disease is found chiefly among farmers, miners, and brickmakers. Severe cases are more common in women and children than in men over twenty-five years of age. Uncinariasis is a disease which occurs in groups of cases, and if one case is found in a family the chances are that other members of the same family are infected.

The testimony of patients severely infected is unreliable. Recalling that any one or more symptoms may be absent or subject to variation, it may be noted that the period of incubation (at least before the malady can be diagnosed by finding the eggs) is from four to ten

<sup>\*</sup>An article by Dr. Pitt, who says that "along the Roanoke River, N. C., malaria or dirt-eating prevails, mostly among poor white people and negroes and originates, in my opinion, from a deficiency of nourishment."—Ep.

weeks. Stages are not necessarily distinctly defined, but are described as (1) stage of purely local symptoms, corresponding to the light cases; (2) stage of simple anaemia, corresponding to the medium cases; and (3) dropsical stage, corresponding more or less to the severe cases. The duration of the disease after isolation from the source of infection has been traced for six years and seven months; how much longer infection will last is not established. If a patient is subject to cumulative infection, the disease may last five, ten, or even fifteen years, and in case of light infection perhaps longer.

External appearance.—In extreme cases there is a general lack of development; skin waxy white to yellow or tan; hair is found on the head, but is more or less absent from the body; breasts are undeveloped; nails white; external genitalia more or less rudimentary; face anxious, may be bloated; conjunctive pale; eyes more or less dry; pupil dilates readily; membranes pale according to the anæmia; teeth often irregular; tongue frequently marked with purple or brown spots; cervical pulsations prominent; thorax emaciated; heart-beats often visible; abdomen frequently with "pot-belly"; extremities emaciated, frequently edematous, and with wounds or ulcers of long standing.

Urine 1010 to 1015; in advanced cases albumen without casts; acid or alkaline.

Fæces reddish brown, contain eggs, and may contain blood.

Circulatory system.—Anæmia pronounced, according to degree and duration of infection; blood watery, with decreased red blood corpuscles and with eosinophilia; "heart disease" very commonly complained of; hæmic murmurs present; pulse 80 to 132 per minute.

Temperature.—Subnormal, normal, or to 101° to 102° F.

Respiratory system.—Breathing may be difficult, slow, or increased to as high as 30.

Muscular system.—Emaciation and great physical weakness.

Digestive system.—Appetite poor to ravenous; abnormal appetite often developed for pickles, lemons, salt, coffee, sand, clay, etc.; pain in epigastrium; constipation or diarrhea.

Nervous system.—Headache, dizziness, nervousness, mental lassitude, and stupidity.

Genital system.—Menstruation irregular or absent; if present, it occurs chiefly in winter; there is a marked tendency to abortion.

*Diagnosis*.—The safest plan is to make a microscopic examination of the fæces to find the eggs; or, if fæces are placed on white blotting paper, a blood-like stain will be noticed.

Treatment.—Thymol, or male fern (or ? calomel); iron and good food.

Prognosis.—Good, if patient is not too far gone at time of treatment.

Lethality.—Not yet determined.

Prevention.—Treat all cases found and dispose of fæces.

Economically, uncinariasis is very important. It keeps children from school, decreases capacity for both physical and mental labor, and is one of the most important factors in determining the present condition of the poorer whites of the sand and pine districts of the South.

The disease is carried from the farms to the cotton mills by the mill hands, but does not spread much in the mills; nevertheless, it causes a considerable amount of anemia among the operatives.

For the details of the work done by the Board in connection with this disease the reader is referred to the annual report of the Secretary made to the conjoint session of the Board of Health with the State Medical Society in 1904, and to the files of the *Monthly Bulletin*.

## SMALLPOX.

For the past biennial period smallpox has been much more prevalent in the State than at any time since it made its first appearance in January, 1898. In the annual report of the Secretary of the Board for 1902-'03 a tabulated statement giving the number of counties infected, the number of cases and number of deaths according to race from the beginning to May 1, 1903, will be found. In the corresponding report for 1903-'04 similar statistics for that year are given, the total number of cases being 5,370-2,840 white and 2,530 colored—with total deaths 69:35 and 34 respectively, according to race. Previous to this year the number of cases was much larger among the negroes and for the first time this proportion was reversed. From January 12, 1898, to May 1, 1904, there have been reported 17,105 cases with 400 deathsamong the whites, 6,740 cases with 172 deaths, and among the colored people 10,365 cases with 228 deaths.

The explanation of the practical difficulty in controlling the disease is to be found in its extreme mildness, which, together with a pronounced prejudice against vaccination among the more ignorant of the population, creates a public sentiment strongly hostile to those thorough and drastic measures which are essential to its successful control and final obliteration from the State. In view of the above facts the present outlook is for a continuance of smallpox for years to come, or until all the people have either had it or been vaccinated.

The health officers of the State having become more familiar with the disease, the demand for the State Smallpox Inspectors has greatly diminished. During the two years Dr. Harrill for the western section has visited only eight

counties, viz., Buncombe, Stanly, Richmond, Ashe, Wilkes, Anson, Catawba and Caldwell; and Dr. Tayloe for the eastern section, nine, viz., Vance, Columbus, Pender. Greene, Pitt, Onslow, Camden, Beaufort and Hyde.

For details the reader is referred to the annual reports of the Secretary to the conjoint session, to be found on preceding pages.

# LEGISLATION.

Two important measures having in view the better protection of the public health were enacted by the General Assembly of 1903. These were "An Act to Define the Practice of Medicine and Surgery," and "An Act to Protect Water Supplies."

The object of the former was to eliminate charlatanism of all kinds by requiring all persons offering to heal disease by any method whatsoever to prove to the satisfaction of the State by obtaining from its Board of Medical Examiners a license, thereby showing that they had acquainted themselves with the structure, functions and diseases of the human body and with those methods of healing generally accepted as the best. While materially weakened by an amendment exempting Christian Scientists, it covered all other forms of quackery. Unfortunately, however, the Supreme Court in State v. Biggs, declared it unconstitutional.

The act to protect water supplies was an amplification and improvement in many respects on an act under the same title passed by the Legislature of 1901, which it repealed. The provision empowering the State Board of Health to have the biological analyses required made in its own laboratory and to charge therefor "the sum of five dollars (\$5) for each examination," has resulted in a much closer surveillance of the public water supplies than ever before, and has at the same time enabled the laboratory, with the assistance of the Agricultural Department, to keep affoat and do much valuable work. A few of the water companies have shown a disposition to evade the law or payment for the work, and an amendment to cure this trouble would be of material benefit.

In its report to the American Public Health Association at the 1901 meeting the Committee on Water Legislation placed North Carolina with only three other States in the first class; and as the act of 1903 is a very great improvement upon former statutes, her position in that rank would seem to be assured.

The following is the act:

## AN ACT TO PROTECT WATER SUPPLIES.

The General Assembly of North Carolina do enact:

Section 1. In the interest of the public health every person, company, municipal corporation or agency thereof selling water to the public for drinking and household purposes, shall take every reasonable precaution to protect from contamination and assure the healthfulness of such water; and any provisions in any charters heretofore granted to such persons, companies or municipal corporations in conflict with the provisions of this act are hereby repealed.

Sec. 2. Such water-works as derive their supply from lakes or ponds or from small streams not more than fifteen miles in length shall have made a sanitary inspection of the entire water-shed not less, under any circumstances, than once every three calendar months, and a sanitary inspection of any particular locality on said watershed at least once in each calendar month, whenever in the opinion of the board of health of the city or town to which the water is supplied, or when there is no such local board of health, in the opinion of the county superintendent of health, or in the opinion of the State Board of Health, there is reason to apprehend the infection of the water in that particular locality. Said companies or municipal corporations shall cause to be made a sanitary inspection of any particular locality on said water-shed at least once in each week, whenever in the opinion of the board of health of the city or town to which the water is supplied, or when there is no such local board of health, in the opinion of the county superintendent of health, or in the opinion of the State Board of Health, there is special reason to apprehend the infection of the water from that particular locality by the germs of typhoid fever or cholera. The inspection of the entire water-shed as herein provided for shall include a particular examination of the premises of every inhabited house on the water-shed, and in passing from house to house a general inspection for dead bodies of animals or accumulations of filth. It is not intended that the term "entire water-shed" shall include uninhabited fields and wooded tracts that are free from suspicion. The inspection shall be made by an employee of, and at the expense of, said water company or municipal corporation, in accordance with reasonable instructions as to method, to be furnished by the Secretary of the State Board of Health. The said sanitary inspector shall give in person to the head of each household on said water-shed, or in his absence to some member of said household, the necessary directions for the proper sanitary care of his premises. It shall further be the duty of said inspector to deliver to each family residing on the water-shed such literature on pertinent sanitary subjects as may be supplied him by the municipal health officer, or by the Secretary of the State Board of Health.

Sec. 3. In case of those companies obtaining their supply of water from rivers or large creeks, having a minimum daily flow of ten million gallons, the provisions of section 2 shall be applied to the 15 miles of water-shed draining into the said river or creek next above the in-take of the water-works.

Sec. 4. Every water company, whether owned by private individuals or corporations, or by the municipality, shall have made, not less frequently than once in every three months, at its own expense, by the chemist of the State Board of Health, or such chemist as the said board may designate, a chemical analysis; and once every month at its own expense by the Biologist of the State Board of Health or such biologist as said board may designate, a bacteriological examination of a sample of its water drawn from a faucet used for drinking purposes, packed and shipped in accordance with the instructions to be furnished by the Secretary of the State Board of Health: *Provided*, that when the supply is from a flowing artesian well said analysis shall be made in the discretion of the Secretary of the State Board of Health.

Sec. 5. Failure on the part of any water company to comply with the requirements of sections 2, 3, and 4 shall be punished by a deduction from any charges for water against the city or town supplied. of twenty-five dollars for each and every such failure: Provided, that in no one year shall the sum of such forfeitures exceed five hundred dollars. Where the water-works are owned or operated by the city or town, failure on the part of the municipal official having in charge the management of the water-works, to comply as above, shall be a misdemeanor, and punishable by a fine of not less than ten nor more than twenty-five dollars, or by imprisonment for not less than ten nor more than thirty days: Provided further, the said official does not prove to the satisfaction of the court that in spite of reasonable effort and diligence on his part he was prevented, directly or indirectly, by his superiors from doing his duty in this respect, in which case said superior officer or officers shall be deemed guilty of a misdemeanor, and punished by a fine of not less than fifty nor more than two hundred dollars, or by imprisonment for not less than one nor more than six months.

Sec. 6. Every city or town having a public water supply shall, at its own expense, have made at least once in every three months by one of its own officials a sanitary inspection of the entire water-shed of its water supply, and it shall be the duty of the said official making such inspection to report to the mayor any violation of this act.

SEC. 7. Every person, firm or corporation residing or owning property on the water-shed of a lake, pond or stream from which a public drinking supply is obtained, shall carry out such reasonable instructions as may be furnished him in the manner set forth in section 2, or directly by the municipal health officer, or by the State Board of Health. Failure to do so shall be deemed a misdemeanor, and shall be punishable by a fine of not less than two dollars and costs nor more than twenty-five dollars and costs, or by imprisonment for not less than ten nor more than thirty days.

SEC. 8. The mayor of each city or town having a public water supply shall have concurrent jurisdiction with any justice of the peace to hear and determine all violations of this act: *Provided*, such violation is within the jurisdiction of the justice of the peace.

Sec. 9. As a check and guarantee of the faithful performance of the requirements laid down in the preceding sections of this act, the State Board of Health shall make or have made by its authorized agents such inspections of water-sheds and such chemical and bacteriological examinations of the public water supplies of the State as may be deemed necessary to insure their purity. Should this inspection or examination show conditions dangerous to the public health, the Secretary of the said State Board of Health shall notify the mayor, the municipal health officer and the superintendent or manager of the water-works at fault, and demand the immediate removal of said dangerous conditions. If at the end of thirty days after the service of said notice and demand, the said dangerous conditions have not been removed, to the extent that due diligence could accomplish such removal, the said Secretary shall have printed in one or more of the local newspapers a plain statement of the facts for the information and protection of the citizens using the water.

Sec. 10. Each sanitary inspector herein provided for is hereby authorized and empowered to enter upon any premises and into any building upon his respective water-shed for the purpose of making the inspection herein required.

Sec. 11. Whoever defiles, corrupts, pollutes any well, spring, drain, branch, brook or creek, or other source of public water supply used for drinking purposes, in any manner, or deposits the body of any dead animal on the water-shed of any such water supply, or allows the same to remain thereon unless the same is buried with at least two feet cover, shall be guilty of a misdemeanor, and fined and imprisoned in the discretion of the court.

Sec. 12. Whoever shall collect and deposit human exercta on the water-shed of any public water supply shall be guilty of a misdemeanor, and punished by fine and imprisonment in the discretion of the court.

Sec. 13. No person, firm, corporation or municipality shall flow or discharge sewage into any drain, brook, creek or river from which a public drinking-water supply is taken, unless the same shall have

been passed through some well known system of sewage purification approved by the State Board of Health. Any person, firm, corporation or the officer of any municipality having this work in charge, who shall violate this section shall be guilty of a misdemeanor, and the continued flow and discharge of such sewage may be enjoined by any person.

Sec. 14. That all schools, hamlets, villages, towns or industrial settlements which are now located, or may be hereafter located on the shed of any public water supply, not provided with a sewerage system, shall provide and maintain a tub system for collecting human excrement, and provide for the removal of the same from the watershed at least twice each week. Every person, firm, corporation or municipality violating this section shall be guilty of a misdemeanor, and fined or imprisoned in the discretion of the court.

Sec. 15. No burying-ground or cemetery shall be established on the water-shed of any public water supply nearer than five hundred yards of the source of supply.

Sec. 16. All water companies now organized under the State laws, which may maintain public water supplies may acquire, by condemnation, such lands and rights in land and water as are necessary for the successful operation and protection of their plants, said proceedings to be the same as prescribed by chapter 49, section 1 of The Code of North Carolina.

Sec. 17. For carrying out the provisions of this act the State Board of Health is authorized and empowered to have the bacteriological examinations made as hereinbefore provided for, and to charge for the same the sum of five dollars (\$5) for each examination.

Sec. 18. All laws and parts of laws in conflict with this act are hereby repealed.

Sec. 19. That this act shall be in force from and after its ratification.

# THE MONTHLY BULLETIN.

The Monthly Bulletin continues to be our most valuable means of reaching the people, and especially the medical profession. Every physician is, or should be, in a certain sense, a health officer to his own clientele, and our principal method of educating the public in hygiene is through him. The word of the family physician is far more weighty with those whose confidence he possesses and with whom he comes in frequent personal communication on all questions relating to health than anything said or written by a stranger. In order, therefore, to keep in touch with him and to keep alive his interest and secure his co-operation, the Bulletin is sent regularly to all the physicians in the State.

In addition to a monthly review of the diseases prevalent in the State and the mortuary statistics of the principal cities and towns, leading articles by the Secretary of the Board, who is its editor, including as occasion demands, direct communieations to physicians, and from time to time by the bacteriologist, as well as selected articles on pertinent subjects, are printed. The following titles will give an idea of the scope if its work: Plague Conference, Biological Laboratories and Public Health, A Bill to be Entitled an Act to Define the Practice of Medicine and Surgery, Recent Legislation, An Act to Protect Water Supplies, The Medical License Law as Amended, Notice to Physicians, Germs and Germicides, Annual Meeting of the Board of Health and of the State Medical Society, Report of the Secretary of the North Carolina Board of Health, June 1, 1902, to June 1, 1903; Hook-worm Disease, the Hook-worm Disease in Alabama, Laboratory Notes, The Fly as a Carrier of Typhoid Fever, Consumption is Chiefly Caused by the Filthy Habit of Spitting, The Domestic Filter,

Diphtheria, Extracts from the Evidence for Antitoxin, Wanted a Physician, A Case of Uncinariasis (illustrated), A New Course in General Hygiene Offered at the University, Our Medical License Law, Brief of the Attorney-General in State v. Biggs, Amendment to Medical License Law Unconstitutional, The Health Conscience—Pneumonia, The Relation of Early Diagnosis and Treatment to the Prevention of Tuberculosis, Antitoxin Again, The Adulteration of Foods and Medicines, The War Against Mosquitoes—An Appeal to Physicians, Hook-worm Disease Again, The Ethics of Eating, The Disinfection of Paper Money, Notice to Physicians, Annual Meeting of the State Medical Society and of the Board of Health, Dr. Ernest P. Foster, Dr. Abner Alexander, The Etiology of Malaria (illustrated), House Infection of Tuberculosis, Annual Report of the Secretary of the North Carolina Board of Health-1903-1904, Microbes and the Milk Supply, Compulsory Notification of Tuberculosis, The Prevention of Tuberculosis, Typhoid Fever and Drinking-water, Diphtheria, Woman's Duty Toward the Health of the Nation, A Scheme to Induce General Vaccination, The Germs of Consumption.

# ARTICLES FOR THE PRESS.

The following articles were sent to all the newspapers of the State with request to print:

## TYPHOID FEVER-RULES FOR ITS PREVENTION.

(Issued by the North Carolina Board of Health).

The active agency in the causation of typhoid fever is a bacterium. the bacillus typhosus, which attacks and causes the ulceration of certain glands in the small intestine, developing therein by myriads. They are therefore to be found chiefly in the bowel discharges, although present also in the excretion of the kidneys and to some extent in the expectoration of a person sick with the disease. From one of these sources, nearly always the first named, the bacteria are transferred to the intestinal tract of a healthy person. The poison is always swallowed. The most common agencies of transfer are the drinking water, including milk infected from washing caus in polluted water, and the common house-fly, although it may be conveyed directly to the nurse by her own soiled hands, and sometimes in dust. The most important rules therefore for the prevention of the extension of the disease may be briefly stated as follows:

- 1. Cover *immediately* upon their passage the body discharges, to prevent access of flies.
- 2. As soon as possible thoroughly disinfect the discharges by mixing in equal quantity with them one of the following: (a) freshly-made milk of lime or "whitewash" (unslaked lime); (b) a five-percent, solution of carbolic acid: (c) a 1-to-1,000 solution of corrosive sublimate; (d) a 1-per-cent, solution of formaldehyde. After standing a half hour (covered all the time), the mixture should be buried (never thrown on the surface of the ground) at a distance from the well of not less than 150 feet.
- 3. Provide in the sick-room a wooden tub one-third full of either of the three last-named solutions, and drop therein as soon as removed everything in the way of body or bed clothing, handkerchiefs, towels, etc., that have come in contact with the patient, and keep them submerged until they be boiled, washed and dried in the sun.
- 4. All remnants of food that may for any reason be carried into the sick-room must be burned.
- 5. The nurse should wash her hands and dip them into one of the solutions, preferably corrosive sublimate, after every "changing" of the patient. She should never draw water from the family well un-

less a pump is used. In case it should be absolutely necessary she should disinfect her hands as above before doing so.

- 6. The soiled linen of the patient should never be washed at or near the well or spring. The greatest care should be observed to prevent the drainage or seepage through the soil into the well or spring from accumulations of filth of all kinds. As soon as a case of typhoid fever appears in a family all drinking water should be boiled until a report on the same can be obtained from the State Biologist, the family physician making application to the Secretary of the Board of Health for permit and sterilized bottle.
- 7. As the germ is present in the intestine in the preliminary stages and for several weeks after convalescence is established and the patient practically well, extra care of surface privies should be observed. Every evacuation should be immediately and completely covered with lime or dry powdered earth.

Summary.—Prompt disinfection of all discharges from the body of the patient; protection of the same against flies; special care as to the drinking water; scrupulous cleanliness.

To the Profession.—As the people cannot be reached except through the medical attendant, we earnestly beg all physicians having cases of typhoid fever under their care to insist upon the strict observance of the above simple rules. Printed copies of the same will be furnished in quantity upon request.

#### MOSQUITOES AND MALARIA.

The most prevalent disease in North Carolina, certainly from now until frost, is malarial fever in one form or another. It is by no means confined to the low-lying Eastern section of the State, but is quite abundant in many localities in the hill country, having been reported even from Cherokee.

By recent scientific investigations the cause of the fever has been shown to be a microscopic animal known as the plasmodium malariæ or hem-amaba vivax, which feeds upon the red corpuscles of the blood—hence the pallor of persons suffering from chronic malaria. The development of this little parasite in the blood is as follows: One of the spores, or baby germs, so to speak, enters a red corpuscle and, feeding on its contents, grows until at the end of twenty-four hours it has become nearly as large as the corpuscle. It then, by a process known as segmentation, splits up into a dozen or more little spores again, which for a short time are free in the blood and unattached to the corpuscles. It is just as the segmentation occurs that the chill comes on, which explains the periodic recurrence of the chill every twenty-four hours, and as it has been found that quinine is most effective in killing the germs while they are free in the blood and not buried in the substance of the corpuscles, the best time to give quinine is just before the chill is expected.

The method of the introduction of the malarial poison, the plasmodium, certainly the chief method, has been demonstrated beyond all question to be the sting of a certain variety of mosquito known as anopheles, the common mosquito, which while more abundant is innocent as a carrier of disease, being known as culex. The latter species will breed in still water of any kind, no matter how pure, but the former, our enemy, will only breed in stagnant pools in which there is a certain amount of vegetable matter, especially if there are no fish, such as top minnows or sun-perch, which feed upon the larvae or wiggletails. This explains the fact that malaria is much more abundant after freshets, in the course of which the stream, getting out of its banks, washes holes in the ground-and, speedily falling, leaves there stagnant pools with few or no fish in them. Mosquitoes are very much more abundant this exceptional year of freshets than usual. It also explains the danger of brick holes.

The larvæ, or wiggletails, as we generally call them, are the young mosquitoes. Although they live in the water from the time they are hatched from the eggs which were laid on the surface until they reach maturity, they cannot live without air—they must breathe Contrary to the general rule, they breathe "wrong end foremost"—through a long breathing tube which springs from the body near the tail and which they stick out of the top of the water when they want air. The bearing of this arrangement on their destruction will appear later.

There is a popular misapprehension in regard to the movement of mosquitoes. The general impression is that they are carried by the wind, and people at the sea-side say that a land breeze brings mosquitoes. It is a fact that they are more abundant when the breeze is from the land or in a calm, but according to those who know best the fact probably is not that they are blown from the swamps to landward, but that they simply come out again from the trees and shrubbery and the lea side of houses where they had taken refuge from the strong sea breeze which was too rough for their fragile bodies. With rare exceptions they travel, it is said, seldom more than a mile, and generally not so far. When one is troubled with mosquitoes a careful search will almost always reveal stagnant water in the near vicinity. The destruction of mosquitoes and the consequent prevention of malaria is accomplished in two ways: First and best, by the thorough drainage of all stagnant pools of water, and second, by keeping the surface of such pools covered with petroleum, what is known as light fuel oil, or even the crude petroleum being better and cheaper than ordinary kerosene. The film of oil prevents the larvæ from breathing and smothers them. The quantity necessary is one ounce or two tablespoonfuls to every fifteen square feet of surface, repeated every two weeks. This oil method was employed with great success last year by the city of Winchester, Va., and our own town of Tarboro has recently shown a most commendable spirit of enterprise in adopting it. Some care and a little expense in securing protection against mosquitoes and in providing a supply of pure drinking water will practically insure against malaria.

To those interested in this subject I cordially commend a very interesting and valuable book on mosquitoes written in popular and entertaining style by Dr. L. O. Howard, the Chief Entomologist of the United States, and published by McClure, Phillips & Co., New York, at a cost of \$1.64, postpaid.

RICHARD H. LEWIS, M. D., Secretary State Board of Health.

## VITAL STATISTICS.

As explained in previous reports, our vital statistics are necessarily partial and incomplete owing to the general character of our population, it being chiefly rural, with one-third of the whole negroes. We have made no attempt, therefore, to collect vital statistics except from cities and towns.

In 1903 twenty-seven cities and towns with an aggregate population of 155,700—91,250 white and 64,450 colored—reported, the average death-rate being 18.3 per thousand, 14.3 for the whites and 23.9 for the colored race.

In 1904 twenty-eight, with an aggregate population of 173,300—101,700 white, 71,600 colored—reported. The total death-rate was 20.0, 15.2 for the whites and 26.9 for the colored.

In round numbers the death-rate for the colored race was about ten per thousand more than for the white race. Whether this means that the increase of the colored population is slower than that of the white, it is impossible to say, because we have no record of births. Our impression, however, in the absence of complete and reliable records, is that the negroes are more prolific than the whites, and therefore in all probability the proportion between the races remains about the same, at least so far as natural increase is concerned.

The scourge of the colored race remains tuberculosis, the death-rate from this disease during the past two years being: In 1903, for the whites, one in 10.26 of all deaths, or 1 to 710 of the population; for the colored, one in 6.46, or 1 to 270. In 1904 it remained much the same: for the whites, 1 in 9.46 of all deaths, or 1 to every 624 of the population; for the colored, 1 in 6.31 and 1 to 234 respectively. To put it in another way: the death-rate from consumption in the

two races is as 1 is to 2.6. With slight variation this proportion has been quite constant for years.

During the present biennial period, 1903-'04, there has been a material decrease in the death-rate from both typhoid and malarial fevers in both races, the latter, however, being proportionately much more fatal to the colored race than the white. In previous reports we have attempted to explain this fact, which is contrary to the usually accepted theory that the negro is less susceptible to malaria than the white man.

For details the reader is respectfully referred to the tables which follow:

TABLE I—Showing the Comparative Prevalence of Certain Diseases in the Three Physical Divisions of the State During 1903 and 1904.

Eastern Division (E)—Alluvial Plain. Central Division (C)—Hilly. Western Division (W)—Mountainous. The figures under the various diseases represent in percentage the proportion of the counties reporting the presence of the disease in question to the whole number of counties sending reports for the month.

Month.	Physical Division.	Year.	Whole Number Counties.	Number Counties Reporting.	Diphtheria.	Diarrhoal Diseases.	Influenza.	Malarial Fever.	Malarial Fever, Pernicious.	Malarial Fever, Hemorrhagic,	Pneumonia.	Scarlatina.	Typhoid Fever.	Smallpox.
	E.	1903 1904	36	33 27	18.2 18.5	0.0	21.2 37.0	18.2 3.7	3.0 3.7	9.1 0.0	18.2 14.8	9.1 0.0	39.3 11.1	18.2 29.6
January.	C.	1903 1904	27	24 23	8.3 30.4	0.0	20.8 21.7	8.3 8.7	0.0 4.3	4.2 0.0	33.3 30.4	25.0 0.0	41.7 21.7	33.3 73.9
Ja	w.	1903 1904	34	31 26	12.9 23.1	0.0 3.8	0.0 11.5	0.0 3.8	0.0	0.0	19.3 34.6	25.8 0.0	25.8 23.1	51.6 53.8
	E.	1903 1904	36	31 27	6.5 14.8	0.0	29.0 48.1	12.9 11.1	6.5 0.0	0.0 3.7	16.1 48.1	3.2 11.1	38.7 29.6	22.6 18.5
February.	c.	1903 1904	27	25 24	0.0 20.8	0.0	32.0 41.7	12.0 0.0	4-0 0-0	4.0 0.0	28.0 41.7	16.0 20.8	28.0 20.8	44.0 75.0
Fel	w.	1903 1904	34	30 29	10.0 24.1	0.0 0.0	16.7 17.2	0.0	0.0	0.0	20.0 17.2	10.0 10.3	26.7 17.2	56.7 48.3
	E.	1903 1904	36	34 29	14.7 13.8	2.9 0.0	17.6 17.2	14.7 13.8	0.0	5.9 3.4	14.7 31.0	2.9 0.0	41.2 24.1	2.9 24.1
March.	C.	1903 1904	27	25 23	4.0 21.7	0.0 0.0	44. 2 39. 1	8.0 4.3	0.0 4.3	4.0	28.0 21.7	12.0 21.7	28.0 13.0	44.0 65.2
2	w.	1903 1904	34	30 30	6.6 16.7	0.0	3.3 26.1	3.3 0.0	0.0	0.0 0.0	13.3 13.3	16.7 13.3	23.3 20.0	73.3 50.0
	E.	1903 1904	36	31 27	6.5 22.2	19.4 0.0	6.5 11.1	25.8 18.5	0.0 3.7	9.7 3.7	6.5 25.9	0.0	38.7 33.3	0.0 22.2
April.	c.	1903 1904	27	25 21	8.0 19.0	8.0	28.0 23.8	12.0 9.5	0.0 4.7	0.0 0.0	12.0 9.5	12.0 19.0	32.0 23.8	56.0 71.4
•	w.	1903 1904	34	29 31	10.3 6.5	3.4 0.0	6.8 22.6	0.0	0.0 0.0	0.0	10.3 9.7	13.8 0.0	20.7 16.1	51.7 38.7
	E.	1903 1904	36	31 25	6.5 12.0	41.9 44.0	6.5 4.0	22.6 28.0	0.0 8.0	3.2 0.0	0.0 12.0	0.0 4.0	48. 4 36. 0	6.5
May.	c.	1903 1904	27	23 23	13.0 4.3	47.8 21.7	4.3 13.0	21.7 8.7	4.3	0.0	0.0	8.7 13.0	52.2 26.0	30. 4 47. 8
	w.	1903 1904	34	28 29	0.0 13.8	42.8 17.2	3.6 13.8	0.0	0.0	0.0	0.0 6.8	7.1 3.4	25.0 17.2	39.3 41.4
	E.	1903 1904	36	31 28	9.7 14.3	12.9 35.7	0.0	41.9	0.0 7.1	9.7 0.0	0.0	9.7 0.0	71.0 50.0	3.2 10.7
June.	c.	1903 1904	27	24 23	0.0 17.3	16.7 39.1	4.2	29.2 21.7	4.2 0.0	0.0	4.2	4.2 21.7	83.3 65.2	33.3 39.1
	w.	1903 . 1904	34	31 29	9.7 10.3	32.2 37.9	3.2 3.4	3.2 0.0	0.0	0.0	3.2 0.0	9.7 3.4	51.6 48.3	29.0 44.8
July.	E.	1903 1904	36	32 32	6.2 9.3	15.6 18.7	0.0	53. 1 43. 7	9.3 6.2	9.3	0.0	3.1 3.1	81.2 78.1	15.6 12.5

TABLE I-Continued.

Month.	Physical Division.	Year.	Whole Number Counties.	Number Counties Reporting.	Diphtheria.	Diarrhœal Discases.	Influenza.	Malarial Fever.	Malarial Fever, Pernicious,	Malarial Fever, Hemorrhagic.	Pneumonia.	Scarlatina.	Typhoid Fever.	Smallpox.
July.	C.	1903 1904	27	23 · 24	$0.0 \\ 16.7$	8.7 16.7	0.0 0.0	$\substack{21.7\\25.0}$	0.0 4.2	0.0 0.0	0.0 0.0	8.7 16.7	91.3 91.7	21.7 29.2
Ju.	w.	1903 1904	34	31 29	$\begin{smallmatrix} 9.7\\10.3\end{smallmatrix}$	12.9 27.6	0.0 0.0	9.7 0.0	6.5 0.0	0.0 0.0	0.0 0.0	12.9 0.0	80.6 89.6	29. 0 24. 1
	E.	1903 1904	36	29 31	24.1 12.9	6.8 6.5	0.0 3.2	55.2 64.5	13.8 12.9	6.8 9.7	0.0 3.2	6.8	75.8 70.9	6.8 9.7
August.	C.	1903 1904	27	25 24	16.0 20.8	0.0 8.3	0.0 0.0	32.0 20.8	0.0	0.0	0.0 8.3	12.0 16.6	80.0 91.7	16.0 12.5
<	w.	1903 1904	34	31 31	22.6 16.1	9.7 0.0	0.0 0.0	6.5 9.7	0.0	0.0 0.0	0.0 0.0	29.0 6.5	67.7 83.9	29.0 22.6
er.	E.	1903 1904	36	30 30	43.3 36.6	3.3 0.0	0.0	63.3 63.3	6.6 6.6	13.3 23.3	0.0 0.0	10.0 0.0	73.3 80.0	6.6 16.7
September.	C.	1903 1904	27	25 21	32.0 52.4	0.0	0.0	28.0 28.6	8.0 4.8	0.0	4.0 0.0	32.0 23.8	92.0 90.5	12.0 14.3
Sep	w.	1903 1904	34	30 26	30.0 30.8	0.0	3.3 0.0	3.3 15.4	0.0	0.0 0.0	3.3 3.8	23.3 23.1	63.3 81.5	20.0 26.9
	E.	1903 1904	36	30 28	26.6 60.7	10.0 0.0	0.0	60.0 57.1	13.3 7.1	10.0 28.6	0.0	6.6 3.6	66.6 64.3	6.6 17.9
October,	C.	1903 1904	27	24 24	33.3 54.2	0.0	8.3 12.5	29.2 20.8	4.2 0.0	8.3	12.5 4.2	29. 2 20. 8	70.8 87.5	25.0 25.0
ŏ	w.	1903 1904	34	31 28	45.1 32.1	0.0 0.0	0.0 3.6	3.2 10.7	0.0 0.0	0.0 0.0	6.4 17.9	22.6 25.0	64.5 78.6	16.1 17.9
ei .	E.	1903 1904	36	29 31	34.5 38.7	0.0	6.8 0.0	41.4 41.9	6.8 9.7	17.2 19.3	0.0 12.9	6.8 9.7	58.6 58.1	13.8 41.9
November.	C.	1903 1904	27	24 22	33.3 54.5	0.0	12.5 4.5	0.0 18.2	0.0 9.1	0.0 0.0	12.5 18.2	41.7 31.8	58.3 77.6	33.3 40.9
Š	w.	1903 1904	34	31 29	29.0 37.9	0.0 0.0	6.5 3.4	6.5 0.0	0.0 0.0	0.0 0.0	16.1 20.7	16.1 24.1	58.1 62.1	25.8 34.5
÷.	E.	1903 1904	36	28 33	42.9 30.3	0.0 0.0	28.6 3.0	14.3 15.1	0.0 3.0	7.1 6.1	10.7 30.3	7.1 9.1	32.1 39.4	17.9 36.4
December.	C.	1903 1904	27	24 24	50.0 50.0	0.0	12.5 8.3	8.3 8.3	4.2 0.0	0.0 0.0	37.5 16.6	25.0 33.4	37.5 45.8	37.5 41.7
De	w.	1903 1904	34	30 32	23.3 18.7	0.0	3.3 18.7	0.0	0.0	0.0 0.0	13.3 25.0	10.0 21.9	30.0 34.4	36.7 21.9
the	1903	E. C. W.	36 27 34	30.7 24.2 30.2	20.0 16.6 17.4	9.4 6.8 8.4	7.9 13.9 3.9	35.3 17.5 3.0	4.9 2.4 0.5	8.4 1.7 0.0	5.5 13.9 8.8	4.6 18.9 16.4	55. 4 57. 9 44. 8	10.0 32.2 39.7
Average for the Year.	1904	E. C. W.	36 34 34	29.0 23.0 29.0	23.7 30.2 20.0	8.7 7.1 7.2	10.3 13.8 10.0	33.3 14.5 3.3	5.7 3.0 0.0	8.1 0.0 0.0	15.1 13.3 12.7	3.4 19.9 10.8	47.9 54.5 47.0	21.7 44.7 35.4
Ave	1903 1904	State.	97	85. 1 81. 0	19.0 24.6	8.2 7.7	8.6 14.7	18.6 17.1	2.6 2.9	3.4 2.7	9.4 13.7	13.3 11.4	52.7 49.8	27.3 33.9

TABLE II—Showing the Comparative Prevalence of Disease During the Years 1903 and 1904.

THE YEARS 1903	AN	D l	90	ł.	_	_				_	_	_
	N	um	ber Pr	of ( ese	nce	of	es tl eacl Ion	h D	Mei	ntio ise	n tl	ne
· Disease.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Number of counties that sent in reports \ 1903 (97 counties in the State) \ 1904	87 76	85 80	90 82	85 79	82 77	86 80	86 85	85 86	85 77	85 80	84 82	82 89
Cholera (chicken)		2	1	1	3 1		2	2		1	2	
Cholera (hog)	2 2	2 1	1	<u>4</u>	3 2	<u>î</u>	9 4	· 6	7 4	10 5	7 5	5 4
Diarrhœal diseases	1	1	1	9	36 21	18 30	11 18	5 4	1	3		
Diphtheria	12 18	5 16	8 13	7 12	5 8	6 11	5 10	18 15	30 30	30 39	27 34	31 29
Distemper (horses)	2	2	2	1 3	1							2
Influenza	12 18	22 28	18 22	11 15	4 8	2		<u>-</u>	1	2	7 2	12 7
Malarial fever	8	7 3	8 5	11 8	12 9	21 16	25 22	27 28	27 29	25 24	14 17	6 5
Malarial fever, hemorrhagic(1903(1904	4	1	3 1	3 1	1	3	3	2 3	47	5 8	5 6	2 2
Malarial fever, pernicious	1 2	3	1	<u>-</u>	1 3	1 2	5 3	4	4 3	5 2	2 5	1 1
Measles\ \) 1903\ \ \ 1904	18		13 31	16 32	14 32	11 23	6 14	5 14	6 8	5 13	5 13	7 13
Mumps 1903	6		11 5	13 8	7 6	2 3	4	2	1 2	3	6 2	3 2
Pneumonia	20	18 28	16 18		6	2		3	2	5 7	8 14	15 22
Rabies (dogs)		1		1		1	1	1	1		1	1
Rotheln	2		1	2								1
Scarlatina 1903	17		9	7 4	4 5	7 6	7 5	14 6	18 11	16 13	17 17	11 17
Smallpox	31	35 37		29 35	20 28	18 25	19 18		11 15	13 16	20 32	25 30
Staggers (horses)	- 6	1										
Typhoid fever	31 14				37 20	58 43	72 73	63 70	64 64	57 61	49 53	27 35
Varicella 1903	3		2 3		4	1	1		1	1	2 2	2
Whooping-cough	21	20	27 20	25 21	22 20	27 23	35 18		22 20	19 23	18	21 23

TABLE III-Table of Mortality Reports for Year Ending December 31, 1903.

tion.	Py Towns.	13,000	18,200	$\frac{8,000}{5,000}$ 13,000	3,100	4,800	6, 100	10, 100	3,800	1,500	1,500
Population.	By Races.	8,000 5,000	$\frac{11,000}{7,200}$ 1	8,000	1,200 $1,900$	2,500	3,500	$\frac{6,100}{4,000}$	$\frac{2,100}{1,700}$	900	1,200
	By Towns.	6.5	17.7	• • •	9.0	13.3	18.2	22.3	o. o.	18.0	12.0
Rate for Year.	By Races.	4.5 9.3 16.8 18.6	6.6 15.3 17.7 33.3 21.5	24.0 19.0 22.0	9.2	010	6.8 10.0 18.2 4.6 29.2 18.2	31.5 13.4 22.3 48.0 35.7	9.0	26.7 20.0 18.	$\begin{array}{c} 0.0 \ 12.5 \\ 0.0 \ 10.0 \end{array}$
	December.			24.0 24.0	10.0	9.6 9.2 26.1 16.9		$\frac{31.5}{48.0}$		40.0	
nths.	November.	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	29.4 10.9 25.1 19.5 9.8 16.4 14.2 28.3 21.7 21.7 23.3 23.3 23.3 13.3	$112.018.021.025.530.019.521.7\\31.236.040.826.414.033.624.0$	0.010.0 $6.312.6$	4.814.4 0.0 4.8 9.614.433.6 15.631.3 20.8 15.6 20.9 23.1 10.4	27. 732. 327. 718. 5 50. 8 69. 2 32. 3	3.9	5.711.420.6 0.0 0.0 5.722.8 63.563.549.456.528.228.235.3	0.0 0.0 53.3 26.7 0.0 20.0 0.0 0.0	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
Mo	October.	31.2	16.4	19.5 33.6	6.3	23.1	24.0 69.2	$\frac{9.8}{21.0}$	28.2	6.0	80.0
), by	September.	12.0	23.3	30.0	0.020.0	9.6	17.1 50.8	15.7 57.0	0.0	20.0	10.0
1,000	August,	10.5	19.5	25.5 26.4	0.0	4.8	18.5	$\begin{array}{c} 15.7 \\ 36.0 \end{array}$	56.5	0.0	20.0
Per	July.	9.0	25.1 21.7	21.0 40.8	20.0 13.3	4.814.4 0.0 [5.631.320.8]	13.7	11.8 48.0	20.6 49.4	13.3 20.0	10.0
(lal	June.	19.2	$\frac{10.9}{21.7}$	$\frac{18.0}{36.0}$	0.0	14.4 31.3	27.4 32.3	13.8 27.0	11.4	13.3 20.0	0.0
Death Rate (Annual) Per 1,000, by Months.	May.		29.4 28.3	$\frac{12.0}{31.2}$	$10.0 \ 10.0 \ 20.0 \\ 13.3 \ 0.0 \ 13.3$		10.3 27.7	$\begin{array}{cccccccccccccccccccccccccccccccccccc$		26. 7 13. 3 13. 3 20. 0 20. 0 20. 0	20.0
ıte (	April.	6.0	8.7	$\frac{10.5}{38.4}$	$\begin{array}{c} 0.0 \ 16.0 \\ 6.7 \ 0.0 \end{array}$	$\begin{array}{ccc} 0.0 & 9.6 \\ 10.4 & 15.2 \end{array}$	3.4	13.8 33.0	5.7 0.0	0.0	10.0
h Re	Матсћ.	15.0 28.8	$17.0 \\ 8.7 \\ 16.7 \\ 20.0$	$12.010.5 \\ 19.238.4$	0.0	$\frac{0.0}{10.4}$	0.0 3.4 13.8 27.7	13.813.8 $39.033.0$		26.713.3	30.010.0
Deat	February.	9.0	12.0 13.3	16.5 33.6	0.0	5.5	6.8	5.9	11.4	0.0	20.0
	January.	13.5	14.2 20.0	13.5	20.0	0.0	27.7	$\frac{2.0}{27.2}$	17.1	40.0 20.0	0.0
	Grand Total.	168	323	294	28	62	111	225	72	27	18
ಣೆ	Total by Races.	33	168 155	152	111	33	35	82 143	19	8 <u>0</u>	122
Deaths by Months, 1903	November.	-1 m	13 11 17 8 27 10 23 16 9 15 13 6 12 8 10 12 17 13 13 14 14 14 8 20	$\begin{matrix} 7 & 812 & 14 & 17 & 20 & 13 & 17 & 16 \\ 16 & 13 & 15 & 17 & 11 & 6 & 14 & 10 & 10 \end{matrix}$	11	2.2	1 2 2	5 2 16 7 11 16	5 2 5 0	2.2	2 0
ths,	October.	9 8	6.4	24	0-	در د	15	7	H 4	40	00
on	September.	တယ	9	85	0101	014	4 11.	s 5	0 4	0	
Σ	August.	1-1-	16	11	00	<b>→</b> 00	6 4 1	821	0 00	00	010
iq s	June. July.	12.00 0.00	82	47.	0 2 2	6 4	81-	9 16 1	9 2 3		0 0
th	May.	1000	22	3 8	107	22	e 0			61-	010
)es	April.	40	- 22 S		0	0100	- 9	7 12	0 27	0	-10
	Матсh.	6 12	17	00 00	0	0.0	O 80	13.7	- 67	0.0	80
	February.		$\Xi_{\infty}$	9 11 8 14	_ c m	27	014	es 00	0100	00	0.0
	January.	9.5			6/100	0 1	00	9	oo −1	თ ⊶	1
	Races,	કંઇ	કંં:	કુંગું	≽ິບ	≽.ດ.	≽່ວ	≱೮	Š.O.	≽ັບ:	કું છું
	Towns and Reporters.	Asheville Dr. C. V. Reynolds,	Charlotte Dr. F. O. Hawley.	Dr. N. M. Johnson.	3denton Dr. T. J. Hoskins.	Fayetteville Dr. John D. MacRae.	Goldsboro George E. Hood, Mayor. R. A. Creech, Health Officer.	Greenshoro	Henderson Dr. John H. Tucker.	Laurinburg. Dr. A. W. Hamer. Dr. G. D. Everington.	Lenoir

TABLE III—Continued.

				Д	eal	ths	by	X	ont	hs,	Deaths by Months, 1903.	25			Dear	Death Rate (Annual) Per 1,000, by Months.	ate (	(Ann	ual)	Pe	r 1,0	.00	by A	font	hs.		Rate fo Year.	Rate for Year.	Population.	latio
Towns and Reporters.	Races.	January.	February.	March.	April.	June.	July.	August.	September.	October. November.	December.	December. Total by Races.	Grand Total.	January.	February.	March.	LirqA	.vsM	June.		July.	August.	September.	October.	November.	<b>D</b> есешрет.	By Races.	By Towns.	By Races.	By Towns.
Lexington J. H. Moyer, Mayor.	3.0.	00	0-	100	100	100	00	200	00	1 = 0	00	9-	7	0.0	0.0	15.0	0.0		0.00	00	0.030.0 0.030.0		0.0 15.0		0.0	0.0	2.0	5.4	20.50	1,300
Marion Dr. Guy S. Kirby. Dr. B. L. Ashworth.	કુંડ.	m O	20		82	0 0	21-		010	-0	0 0 0	22.2	27	45.0 0.0	30.0	30.0	15.045.0 30.060.0	0.0	0.0	000	0.0	00	0.01	15.0 45.0 30.0 15.0 30.0 15.0 15.0 10.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		30.0 27.5 22.5 0.0 12.5	12.5	22.5	800 400	0 1,200
Monroe Dr. J. M. Blair.	≱°	01	0.0	10	. <del>.</del> 4		0	210	20	-081	100	10	56	20.0	13.0		$\begin{array}{c} 6.519.5 \\ 0.080.0 \end{array}$	96.	6.5 6.5	90	0 0	0.0	3.0	$\begin{array}{cccccccccccccccccccccccccccccccccccc$		13.3	8.7	10.6	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	2,450
Oxford Dr. S. D. Booth.	×	0.01		0 1	0 1	000	10	01	75	0-1	20	8 Z	65	0.0	10.0		$\begin{array}{cccc} 0.0 & 0.0 \\ 10.9 & 10.9 \end{array}$	82	30.0 0.0 0.0 54.5 28.8 9.6	0.8	0.9	$\begin{array}{c} 0.0 \ 10.0 \\ 9.6 \ 19.2 \end{array}$	9.5	$\begin{array}{cccccccccccccccccccccccccccccccccccc$		$\begin{array}{cccc} 0.0 & 6.7 & 13.1 \\ 19.5 & 19.2 & 13.1 \end{array}$	19.2	13.1	1.200	2,450
Raleigh P. Sale, Clerk Board Health.	¥°°		15 8 5 9 12 10 18 10 8 11 14 11 18 6 12 9	141	915	8 2 2 0	122	01 6	9 21	-11	511 610 9111117	119	256	22.5 16.5	12.0 22.7	29.0	7.513.5 29.0 9.6	37.	0 15.	0 27	.015	0 9	3.62	$\frac{18.015.027.015.0}{37.212.424.818.618.622.124.1}$	9.0	$\frac{15.014.9}{35.223.618.5}$	23.6	18.5		8,000 5,800
Reidsville James T. Smith, City Clerk.	, , , , ,	0.01		6 13 5 6 13 5	0133	24.	01 00	ಬ ಬ	200	4-	22	40 48	88	18.5	55.4	20.7 20.7 8.3 16.524.8 8.312.4 12.4 16.5 16.5 55.4 120.0 27.7 18.5 64.6 27.7 27.7 18.5 9.2 18.5	27.7	18.	561.	8 2 2 8 8 2 2 8	. 3 12	47	5.5	6.5 9.2 I		8.3 13.8 20.9 32.0 36.9	13. S 36. 9	30.9	2,900 1,300	2,200
Bocky Mount Dr. G. L. Wimberly, Jr. Dr. J. T. Shubrick.	>`°°	-0	27-1	10	27.74	0101	4-4	00	2) C	21-	20	11 20	31	0.0	15.0 8.0		7.5 7.5 0.0 16.0		15.015.030.0 15.716.0 8.0	000	00	0.0	0.015.015.01 0.0 0.0 9.2	15.015.030.0 0.015.015.015.0 15.716.0 8.0 0.0 0.0 9.2 9.2		0.0	51.5	10.0	0.0 12.5 10.0 1.600 17.1 7.3 10.0 1.500	3, 100
Salem F. E. Keehln, Supt. Health. S. E. Butner, Supt. Health.	કુંડ્		ဗ္ဗ	9 -	200	- x	m O	00	40	43	6 2	<b>4</b> □	09	3.7	3.7 21.8 34.3 102.8	34.8	318.5	21.818.2 10.929.110.918.214.514.510.9 34.3 0.0 34.334.3 0.0 0.0 0.068.668.6	3 34.	20	0.0	20.	1.51 9.06	4.51 S.66	၈၅ ဝတ္တဲ	0.0	31.4	16.4	3.614.8 0.031.4 16.4 350	3,650
Salisbury Dr. W. W. McKenzie. Dr. H. T. Trantham.	¥°:	9.21		113	20 20	8 4	00 23	-1-	7.7	20 20	55	47	108	9.6	19.2	28.81	40.0 9.2 28.8 14.4	91 5 91 5 91 5 91 5	2 19.	22	6.4. 2.83	192	2.3	18.5 9.224.6 3.112.3 9.215.4 19.219.214.433.619.214.424.0	1.0	15.4 15.6 16.9 9.6 18.8 16.9	15.8	16.9	2,300	6,400
Southport Dr. D. I. Watson.	3.0,	21	00	10	-00	00	- 21	0	-27	-0	210	53 x0	21	26.4	40.0	13.3	0.0		0 13.	3 13 0 48	20.0	0.0	3.31	0.013.313.3 0.013.313.313.3 13.3 0.0021.0 0.021.0		$\substack{26.6 \ 14.4} \\ 0.016.015.0$	14.4	15.0	200	1,100

TABLE III—Continued.

November.  By Races. By Towns.	12.0 7.5 15.6 2.000 20.0 48.0 48.0	36.013.0 34.317.1	15.6 3,000	1,000	$\begin{vmatrix} 700 \\ 750 \end{vmatrix}$ 1,450	1,000	3,800
December.	12.0 7.5 15.6 20.0 48.0 15.6	13.0	15.6	13			
December.	20.0 48.0	13.0		18.	24.8	26.2	3.1 10.3 13.5
	20.0		14.3	13.3	36.0	21.3 30.6	10.3
November.	1 7	36.0 34.3	8.18	36.0	$\frac{0.0}{16.0}$	21.6 27.3	
	6.0	12.0	33.1	12.0	17.1 32.0	19.2 40.0	6.9
October.	96.0	24.0	33.1	24.0	17.1	24.9 34.9	10.3
September.	96.0	17.1	3.4.8	0.0	17.1	19.2	13.7
August.	18.0	17.1	4.4	0.0	17.1	32.7	9.5
July.	1.0.6	12.0	38.7	0.0	96.0	34.5	8.8
June.	0.0	17.1	<u>24.</u> 	98.0	32.0	33.8	27.4
May.	12.0	12.0 34.5	19.5	0.0	51.4	15. ( 37. 1	5.5
April.	6.0	12.0 51.4	12.0 24.0	0.0	$\begin{array}{c} 17.1 \\ 0.0 \end{array}$	25.2 28.4	6.3
March.	6.0		$\frac{16.0}{19.2}$	$\frac{12.0}{40.0}$	$\frac{0.0}{16.0}$	20.4 33.8	17.1
February.	12.0 24.0	0.0	4.8	0.0	$\frac{0.0}{15.0}$	12.0 16.4	15.8 17.1 6.3 13.7 27.4 6.8 0.013.710.3 6.9 16.0 10.9 4.0 18.991.818.911.595.4 7 8.90.1
January.	0.0	0.0	9.6	0.0	0.0	15.6 21.8	9.5
Grand Total,	33	25	36	24	35	550	99
Races.	24	13	49	20	272	213	33
December.	21.72				-	7 25	2 8 12
	14					20.7	m 61
	014	21	4-1	0.20	- 6	622	46
JsuguA	60 01	01		10	12	200	04
July.	001		ကတ	. O	9	328	0110
June.	00	0				31	တမ
	21				w 67	133	410
			00.00			22	352
				810	-0-	3.5	70 44
		0.0		010	04	80	ကမ
Races.	Č.Š	≱::	≽::	છ.ં	ું.	Ç. ₹	Ċ.ĸ
Towns and Reporters.	r. William J. Thigpen.	desboro	shington	ynesville	ldon T. Gooch, Mayor.	r. Charles T. Harper.	Wilson Anderson.
	Races. January. January. March. May. May. July. August. September. September. December. Total by Races. Grand Total by Races. Grand Total by April. March. March. March. April. May.	Germany.  C. W. Races.  C. March.  L. March.  L. May.  L.	10   10   10   10   10   10   10   10	Anns and Reporters.    Column	Appendix   Appendix	Mayor.   Co.   C	August   Col.   Col.

TABLE IV-Table of Mortality Reports for Year Ending December 31, 1904.

	tion.	By Towns.	3,000	18,200	13,000	3,000	8,000	4,800	6,100	10,100	3,800	1,500	1,300
	Population.	By Races.	8,000 5,000	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	5,000	1,200	3,000	2,500	3,500 2,600	6,100	$\frac{2,100}{1,700}$	900	800
	Rate for Year.	By Towns.	15.3	16.3	$\frac{6.028.512.018.9}{31.252.419.237.2}_{25.9}$	10.7	18.1	26.4	19.1	25.3	16.6	21.3	10.8
	Rate fo Year.	By Races.	24.012.0 9.022.510.5 9.0 6.0 7.5 4.5 10.511.7 15.3 19.224.0 14.424.0 43.226.4 16.819.226.4 7.221.0	$\frac{13.2}{21.0}$	18.9 37.2	$\substack{0.011.7\\0.010.0}$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{smallmatrix} 8 & 0.0 & 19.2 & 24.0 & 21.0 & 24.0 & 28.0 & 9.6 & 19.2 & 14.1 & 15.6 & 26.4 \\ 2 & 62.6 & 41.7 & 83.4 & 26.1 & 47.0 & 31.3 & 26.1 & 20.9 & 26.1 & 23.9 & 26.4 &$	36.9131.827.718.527.736.932.327.718.532.326.1	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
		December.	10.5	10.9 8.3	12.0 19.2	0.0	$\frac{16.8}{16.0}$	14.4 26.1	32.3	19.7 36.0	17.1	13.3 60.0	0.0
	ths.	November.	4.5	$\frac{10.9}{16.9}$	28.5 52.4	$0.0 \ 0.0 $	$\frac{9.6}{32.0}$	19.2 20.9	17.1 18.5	$\substack{21.6\\51.0}$	14.1	13.3 20.0	0.0
	Months.	October,	7.5 19.2	14.2	$\begin{array}{c} 16.5 \\ 9.010.533.019.524.031.5 \\ 628.843.236.055.231.2 \end{array}$	$\begin{array}{c} \textbf{0.010.010.030.010.020.010.0} \\ \textbf{0.0} \ \ \textbf{0.020.020.013.313.3} \ \ \textbf{0.0} \end{array}$	$\frac{9.6}{20.0}$	9.6	27.7	33.0	28.2	66.7	0.015.0 0.045.01 0.0 0.0 0.0 0.0
	by	September.	6.0	18.3	31.5	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	2.8	28.0	32.3	30.0	28.2	30.0	0.0
	1,000	August.	26.4	14.2	36.0	13.3	36.6	17.0	36.9	33.0	21.2	40.0	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
	Per	.viut.	10.5	30.0	19.5	88.0	24.0	2.1.0	27.7	36.0	17.1	13.3	30.0
•	(lal)	June.	24.0	38.2	28.8	20.0	36.0	24.0	18.	39.0	11.4	20.0	15.0
	Luun	May.	9.0	26.7	33.6	0.0	36.0	19.2	13.7	33.0	0.0	0.0	15.0
	9	April.	12.0 24.0	15.3	9.0		20.0	62.6	8.61	30.2	21.2	20.0	24.0
	Rat	Матећ.	24.0 19.2			0.0	12.0	4.55		21.6			
LABLE OF MANIANTA INTO THE POST AND THE PARTY OF THE PART	Death Rate (Annual) Per 1,000,	February.	9.0 12.0	20.0	24.0 28.8	$\frac{30.0}{18.9}$	9.6 44.0	19.2 31.3	18.4	39.0	5.7	13.3	15.0
		January.	15.0	8.7	12.0 41.2	20.0 18.9	4.0	4.8	23.1 23.1	17.5 51.0	17.1	13.3	0.0
2		Grand Total,	199	236	337	35	145	127	116	256	8	83	14
	-i	Total by Races,	105	145 151	151 186	18	93.52	88 88	68	109	22.55	16	1 8
•	Months, 1904.	December.	100	010	∞ ∞	00	5-4	ಬ್	00 F-	9 5 11 11 5 11 13 11 5 7 11 10 17 13 9 11 11 13 12 11 10 11 17 12	ಣ⊣	<b>~</b> €0	80 O
:	100	November.	857	14 835 8 13 8 13 10 8 16 11 18 15 11 13 11	6 7 22 13 16 21 4 19 10 14 12 18 17 23 13 21	00	4.8	44	ro 4	11	40		00
5	뒫	October.		55	4 53	0		0110	ο φ	11	014	- CO	0
4	Į.	September.	46-	318	2282	0101	12	က်	75.	10	01.4	0	00
	2	August.	6 15 7 6 6 9 18 11	15	16	-0	4.6	ကတ	900	==	- 00	2001	0.0
1	Deaths by	July.	128	∞ ∞	= 22 ∞	60 60	7	ro ro	ကဗ	22	8 -	10	22
	Sc	June.	150	_∺=	222	m	60 Q	4 8 16	4.0 8.4	==	04	0 1	100
5	at	May.		-89	- 2	00	00 CC		4.0	<u> </u>	0100		
a I	മ്	April.	66	7 ×	92		6.0	$\begin{smallmatrix}4&1&0\\6&10&12\end{smallmatrix}$	000	==	10 01	-0=	00
2		March.	919	8 9 9 1 15 12 16	8 16 11 18 12 20 1	00			-4	10.00			
5		February.	1	2,53	22	0100	911	-0	470	- 6	ಣ ಅ	101	00
		Races.	C.¥ 151 151	.: .:	Ç.ĕ	≱່:	≽ິບ:	 ×.:	કેંડ		≽ິບ:	Š.°.	ຮູ:
4			120							-			
T SINGE		Towns and Reporters.	Asheville Dr. C. V. Reynolds.	Dr. F. O. Hawley.	Durham Johnson.	Edenton Dr. Thomas J. Hoskins.	Elizabeth City	Fayetteville Dr. A. S. Rose.	Soldshoro - Robert A. Creech, Esq., Health Officer.	Greensboro John S. Michaux, City Clerk.	Henderson Dr. John II. Tucker.	Jr. G. D. Everington.	Lexington John H. Moyer, Esq., Mayor.

TABLE IV—Continued.

rtion.	By Towns.	1,200	2,450	2,450	13,800	4,200	3,100	3,650	6,400	1,400	2,500	1,700
Population.	By Races.	00 <del>8</del>	1,850	1,250 $1,200$	8,000	2,900	$\frac{1,600}{1,500}$	3,300	3,900	200	2,000	1,000
	By Towns.	25.8	9.4	20.0	$\frac{15.0}{18.6}  \frac{9.0}{21.0}  \frac{21.0}{16.5}  \frac{527.0}{22.7}  \frac{6.22.5}{18.6}  \frac{519.5}{26.9}  \frac{22.5}{22.8}  \frac{6.0}{22.8}  \frac{16.2}{22.7}  \frac{118.5}{7}  \frac{18.5}{7}  \frac{118.5}{7}  \frac{118.5}{$	18.1	 	13.4	20.0	8.6	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
Rate fo Year,	By Races.	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} 0.019.219.238.415.2 \\ 0.020.010.040.025.0 \end{array}$	16.2 21.7	$\frac{4.112.412.4}{27.727.764.637.7}18.1$	$\begin{array}{c} 6.010.0 \\ 8.08.7 \end{array}$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} 0.030.848.218.524.627.718.515.4 \\ 9.628.824.019.219.224.019.219.224.018.4 \end{array}$	$\frac{5.5}{14.0}$	13.5 44.0	19.0 18.6
	December.	30.0	13.0	38.4	6.0	12.4 64.6	8.0	7.3	$\frac{9.2}{24.0}$	$\frac{0.0}{24.0}$	24.0	36.0
ıths.	November.		6.5	19.2	22.52	12.4	$\begin{array}{ccc} 0.0 & 15.0 \\ 8.0 & 8.0 \end{array}$	14.5	15.4	0.0 0.0 0.0 0.0 5. 0.0 72.0 0.0 24.0 14.	24.0	12.0
Mo	October.	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	20.0	20.0	19.5	27.7	8.0	0.0	18.5	25.0	30.0	34.3
o, by	September.	0.00	20.0	0.0	7 18.	8.3 8.3 9.2 18.5 2	$\begin{array}{c} 6.018.0 \\ 8.020.0 \end{array}$	34.5	27.7	0.0	96.0	12.0
1,000	-tsuguA	90.0	0.0	9.6 38.4 0.0 0.0 40.0 10.0	722.	86	. ×	0.0	224.6	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	0.0	24.0
Per	July.	0.05	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	38.7	\$20.	8.3 8.3 8.316.5 0.0 73.818.515.555.436.9	0.0	10.3	218.	0.0	18. 0 12. 0 12. 0 0. 0 30. 0 48. 0 24. 0 48. 0 48. 0 24. 0	36.0
nal)	June.,	15.0 60.0 7 0.0 0.0	20.0	6.0	16.5	3 16.5	7.522.5 $8.0$ $0.0$	0.0	348.5	24.0	48.0	34.8
Annı	May.	15.0	20.6	10.0 30.0 20.0 48.0 9.6 9.6	21.0	215.5	8.6	332	28.8	0.0	48.0	0.0
te C	April.		0.0	30.6	9.6	818.6	0.0	34.3		24.0	24.0	51.7
Death Rate (Annual) Per 1,000, by Months.	March.	$\begin{array}{c} 0.0 \ 105.0 \\ 0.0 \ 30.0 \end{array}$		10.7		3.8	8.0		27.7 19.2		18.6	12.0
Deat	February.	0.0	0.0	$\begin{array}{c} 0.0 \\ 48.0 \end{array}$	10.5	12.4 55.4	30.0	10.9 34.3	19.5	0.0	18.0 24.0 24.0 144.0	24.0
	January.	0.0	13.0	$\frac{0.0}{57.6}$	9.0	12.4 46.1	$\frac{0.0}{15.0}$	10.9	12.3	13.3	18.0 24.0	0.0
	Grand Total.	쮼	23	49	256	92	29	49	128	12	49	32
-	Total by Races.	30	13	30	130 126	27 49	113	42	82 46	2	22	13
Deaths by Months, 1904	December.	20	. 210	কক	15 13 15 4 9 13 11 11	2		21	ಚಾರಾ	0	41	80 O
	November.	00		21-	15 13 15 9 13 11	00 00	- 22	4	73.4	00	0	
th	October.	100		0101	222	23	0 -	800	9 4	O 80	1.5	0101
ou	September.		21-	00		0101	00.01	4-	0.10	00	04	
Z	August.		00	0,7	6 14 11 18 11 7 18 11 10 11	21-		00	∞4	21	00	
y.		00	40	44	88	4 9	10	∞	9 4	-10		· 80 O
- S	.aunf	40	0	-0	_==		80	80	10 16 6 5	0 -	001	0101
the second	May.	0	0 1 1 1	7.0	23	0101	0 1	- 6.0	010	0 1	0101	32
e	A pril.	00	77	22		0100	- 3	00	- 64	-00	23	6/169
	March.	12	-02	20	7 10	es 60		e = -	987	-00	4.0	77
1	February.	00	20	09	96	20.00	061	8 67	41	70	- 67	70
-	January.	00										
-	Касез.	≱೮	ÿ.:	S.O.	છે	કંંડ	≽່ບ		કું.	કું.	ÿ.;	
	Towns and Reporters.	Marion Dr. B. L. Ashworth.	Monroe Dr. John M. Blair.	Oxford Dr. S. D. Booth.	Raleigh T. P. Sale, Esq., Clk Bd. Health	Reidsville	Rocky Mount	Salem Supt. Health.	Salisbury Dr. H. T. Trantham.	Southport	Tarboro Dr. William J. Thigpen.	Wadesboro Dr. J. H. Bennett.

TABLE IV-Continued.

			-	Dea	Deaths by Months, 1904.	d s	>	Ton	ths	13	904.			De	Death Rate (Annual) Per 1,000, by Months.	ate	(An	ınuı	al) l	Per.	1,000	by	Mor	ths.		Rate	Rate for Year.	Population.	ation.
Towns and Reporters.	Races.	January.	March.	April.	May.	June.	July. August.	September.	October.	November.	December. Total by	Races. Grand	Total,	February.	Матећ.		April,	May.	June.	.viul	August.	September.	October.	November.	December.	Ву Races.	By Towns.	By Races.	By Towns.
Washington Dr. D. T. Tayloe.	) કેંઇ	4.0	46	மெ	200	100	9 80	1000	20.50	000	4.0	9 11	6 16	49 67 116 20.7 16.5		9 20	7.20	0.0	0.8	20.0	24.0	20.0	$\frac{16.024.032.0}{28.9}\underbrace{20.720.7}_{20.0}\underbrace{20.020.0}_{20.8}\underbrace{24.8}_{23.1}\underbrace{112.4}_{12.4}\underbrace{112.4}_{12.4}\underbrace{12.4}_{20.7}\underbrace{20.7}_{23.1}$	0.0	4.0	16.3 23.1	19.7	3,000	5,900
Waynesville Dr. Thomas Stringfield, Mayor.	કંઇ	-0	0.0	00	00	00	100	00	0	00	'	<u>112</u>	13 7.	0.05	0.0	00	0.0	0.0	0.0	30.0	15.0	0.0	7.5	$\frac{15.0}{0.0}$	30.0	6.9	6.5	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	2,000
Weldon J. T. Gooch, Esq., Mayor.	કુંΩ	00	3 1	00	01	2123	220	0 80	0 83	0	- 8	- 23	29 0.	0.0	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	0.0	0.0	0.0	2.0	17. 1 16. 0	34.3	0.0	0.0	17.1	0.0	10.0 29.3	20.0	700	1,450
Wilmington Dr. Charles T. Harper.	કંઇ	20 16 19 19 16 23 23 16 24 21 15 15 25 32 41 22 36 28 36 37 32 27 34 23	619	13	362	88	637	324	27.2	12.22	3 373	3 600	0 24.	3 38.	8 4 49.	720.	4 43	2.5	9.2	39.3	19.2	34.9	25. 2 29. 4	$\frac{18.0}{37.1}$	18.0 25.1	33.9	28.6	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	21,000
Wilson Dr. W. S. Anderson.	≱∵	w 4	40	-110	413	000	96	6 9 13	2/1 22	00 00	4.9	47 69 116	6 14.	5 13	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	3 25	8.14	22.2	4.0	11.1	18.9 36.0	15.8 52.0	6.3	9.5	15.8 28.0	12.4	17.1	3,800	6,800
Winston Dr. J. L. Hanes.	≽່:		8 11 16 13 16 13 14 15 5 19 20	13	1 10 12 12 3 10 2 14 13 16 13 14 15 5 19 20	122	24	310	192		95	84 159 24	3 21.	3 29.	$243 \begin{tabular}{lllllllllllllllllllllllllllllllllll$	734	24.24	7.0	0.4	37.3	6.0	20.0	50.7	53.5	10.0	35.3	23.1	4,500	10, 500

TABLE V-Showing Causes of Death for the Year Ending December 31, 1903.

						-		-	-	-	-	-	-	_	_		.		-			-	-	1
		Population.		Annual Death Rate Per 1,000.	ual Rate ,000.			-	Ч	***					-sə	*səsı	'səs				Total Deaths.		years.	
Towns.	Касев.	Ву Касез.	.lstoT	By Races.	Total.	Typhoid Fever.	Scarlet Fever.	Malarial Fever.	Diphtheria.	Whooping-coug	Pneumonia.	Consumption.	Brain Diseases.	Heart Diseases.	Neurotic Diseas	Diarrhæal Disea	All Other Diseas	Accident.	Suicide.	Violence.	By Races.	By Towns.	Deaths under 5	Still-born.
Asheville	<u>~~</u>	8,000 5,000	13,000	9.3 18.6	12.9	62.4	0.0	00	0.0	00	00	7 10 20	11 11 6		00	4.0	88	61 10	0 1	04	93	168	12	11
Charlotte	~~ C.¥	11,000	18,200	15.3	17.7	4 9	-00	1 2	2123	es 63	0 0 2	20 1	======================================	24	8 21	12	85	יני זיט	00	0	155	000	57	$\frac{21}{24}$
Durham	 ∴	8,000	13,000	19.0 28.4	22.6	73.4	00	00	e 0	1.2		122	98	7 15 3 17	100	19	64	03.4	0	0	152	- 594	25.52	<b>с</b> 4
Edenton	<u>∵</u>	1,200	3,100	9.8 9.9	9.0	00	00	00	-00	0.0	-00	1	<b>-</b> 0		0 1 0	00	no	00	0	00	11	82	40	0 83
Fayetteville	∴.	2,500	4,800	9.2	13.3	೯೦ ೯೦	00	00	00	-00	00	0 8		80	0 83	7 7 7	110	-15	0 1	0 0	88	62	60 50	- 4
Goldsboro	<u>~~</u>	3,500	6,100	10.0 29.2	18.2	01	00	0 1	00	0 0	00	1 2	21 4	es es	3 1	70.70	39	00	00	0 1	35	Ξ	24	10
Greensboro	~. S.S.	6,100	10,100	13.4	22.3	6.9	00	0	0 1	10	10	11 2	24.6	5 12 12	04	G0 00	43	. ss ro	0	00	85 55 57	225	34	18
Henderson	<u>~~</u>	2,100	3,800	31.2	18.9		0	00	00	06	30	2 1	0	0101	2 4 6 1	L 4	15	0	0	00	19	72		0 4
Laurinburg	<u>~~</u>	009	1,500	20.0	18.0	0.0	00	00	00	00	00	0.0	27.23		3 0 0		<b>→</b> es	00	00	00	96	22	40	0
Lenoir	<u>∵</u>	1,200	1,500	12.5	12.0	00	00	00	00	00	00	0.0		-	00	00	ಣಣ	0	00	00	33	81	00	00

	Still-born.	==	<b>c</b> c	c 0	٥ (-	% S	x ro	-0	10 O	9	-0
1	Deaths under 5 g	00	C-	00	- 20	드당	15	-=	17.22	II	-0
Total Deaths.	By Towns.	1-	27	50	65	256	务	77	8	108	21
To	By Races.	9 -	25.73	25	× 2	1119	48	20	55 ==	5.5	m x
	Violence.	00	00	00	o c	≎1 <b>—</b>	cc	00	00	0 0	° °
	Suicide.	00	0.0	00	00		00	00	00	0 0	0.0
	Accident.	00	40	0	0	re se	0 -	S 0	00	± 01	0
, ses,	All Other Diseas	n o	0.7	77	21.0	28	xx	x x	81 00	X 21	· -
'səsı	Diarrhæal Disea	00	00	0	-0	<b>යා</b> භ	1	0.52	0.5	119	-0
'sa	Neurotic Diseas	00	00	00	00	~ 53	00	0	00	0 7	0
	Heart Diseases.	00	40	e 0	0.83	10		0	7.7	51 55	-0
	Brain Diseases.	00	00	0.0	to 61	12.2	0131	85 21	-0	÷1 —	- 3
	Consumption.		0101	09	9.2	88	m ∞	12	716	မှာက	20 00
	Pneumonia.	0	0	210	0 87	11	40	00	43	57 %	
	Measles.	00	00	00	00	0 0	0 83	00	00	- =	00
.0	Whooping-cough	00	0	0	0		നഥ	00	00	00	00
	Diphtheria.	00	00	0	00	00	-0	co	00	00	-0
	Malarial Fever.	00	00	0	00	0.0	-0	00	00	0 3	00
	Scarlet Fever.	00	00	0	0	0 0	00	00	20	- 7	0.0
	Typhoid Fever.	-3	eo	20.0	0	9 61	81 C	-0	00	m c	0
nual Rate 1,000.	Total.	7.5 5.4	22.5	10.6	13.1	18.5	20.9	10.0	16.4	16.9	15.0
Anr Death Per	By Races.  Total.  Total.		27.5 12.5	8.7	6.7	14.9	13.8 36.9	7.3	31.4	15.6	14.4
Population.	Total.	1,300	1,200	2,450	2,450	13,800	4,200	3,100	3,650	6, 400	1,400
Popul	By Races.	200	800 400	1,850	1,200	8,000	2,900	1,600	3,300	2,500	200
	Races.	Ç.≼	č.ĕ	કું.	č.	કુંડ	કું.	≽ິດ.			કું.
	Towns.	Lexington	, uo	}	}	ich	Reidsville	Socky Mount	{	Salisbury	Southport
		Lexi	Marion	Monroe	Oxford	Raleigh	Reid	Rock	Salem	Salis	Sout

TABLE V-Continued.

100 11 81 10 00 68 10 94 0			Population.		Annual Death Rate Per 1,000.	ual Rate ,000.					r					*sə	*səs	'səs				Total Deaths.		rears.	
W.   2,000   2,500   48.0   15.6   1   0   0   0   0   0   0   0   0   0	Towns.	Касеѕ.	By Races.	Total.	By Races.	Total.	Typhoid Fever.	Scarlet Fever.	Malarial Fever.						Heart Diseases.	Neurotic Disease	Diarrhæal Disea	All Other Diseas	Accident.	Suicide,	Violence.	By Races.	By Towns.	Deaths under 5 y	Still-born.
$ \begin{cases} \text{ W. } & 3.000 & 5.900 & 1.700 & 17.1 & 14.7 & 0 & 0 & 0 & 0 & 0 & 0 & 2 & 0 & 0 & 2 & 1 \\ \text{C. } & 2.900 & 5.900 & 14.3 & 15.6 & 3 & 0 & 1 & 0 & 0 & 0 & 0 & 2 & 2 & 4 & 1 & 3 \\ \text{C. } & 2.900 & 1.300 & 13.3 & 18.5 & 1 & 0 & 0 & 0 & 0 & 0 & 2 & 2 & 0 & 1 & 3 \\ \text{C. } & 3.00 & 1.300 & 21.00 & 21.3 & 26.2 & 5 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0$	Tarboro	) કંઇ	2,000		7.5			00	00	100	00	00	0-					10.00	214	00	10	25	88   88	1 20 rO	
$ \begin{cases} \text{ W.} & 3.000 & 5.900 & 16.9 & 15.6 & 5 & 0 & 0 & 0 & 0 & 2 & 0 & 4 & 2 & 4 & 1 & 1 \\ \text{ W.} & 1.000 & 1.300 & 13.3 & 18.5 & 0 & 0 & 0 & 0 & 0 & 0 & 2 & 0 & 0 & 2 \\ \text{ C.} & 300 & 1.450 & 11.4 & 24.8 & 11 & 0 & 0 & 0 & 0 & 0 & 11 & 1 & 0 & 0$	Wadesboro		1,000		13.0	14.7		,	00	00	00	00	1 2	0-			21 23	ဖဏ	00	00	00	22	25	0 21	10
$ \begin{cases} \text{W.} & \textbf{i.000} & \textbf{i.300} & \textbf{i.300} & \textbf{i.30} & \textbf{i.850} & \textbf{i.85} & \textbf{i.0} $	Washington		3,000		14.3			00	01	00	0	00	4 23					18	71	00	00	£ 6	92	10	0 0
$ \begin{cases} \text{ W.} & 700 & 1,450 & 11.4 \\ \text{ C.} & 10,000 & 21.3 & 24.8 & 1 & 0 & 0 & 0 & 0 & 16 & 17 & 10 & 0 & 0 \\ \text{ C.} & 10,000 & 21.000 & 21.3 & 26.2 & 5 & 0 & 12 & 2 & 15 & 0 & 16 & 17 & 10 & 23 & 19 \\ \text{ C.} & 10,000 & 6.800 & 10.3 & 18.5 & 1 & 0 & 0 & 1 & 0 & 0 & 1 & 18 & 2 & 1 \\ \text{ C.} & 3.000 & 6.800 & 10.3 & 18.3 & 18.3 & 61 & 12 & 2 & 0 & 4 & 13 & 0 & 10 & 10 & 10 & 10 & 10 & 10 $	Waynesville.	કું.	1,000		20.0			00	00	0.0	00	00	21					0	0 80	0	00	20	23	10 -	0
$ \begin{cases} \text{W.} & 10,000 \\ \text{C.} & 11,000 \\ \text{C.} & 3,000 \\ \text{C.} & 3,000 \\ \text{C.} & 4,450 \\ \text{C.} &$	Weldon	કંઇ	700	1,450	$\frac{11.4}{36.0}$			00	00	0 m	00	00	0 -	- 22				4 4	0 89	00	00	272 272	35	61∞	0
al, 27 towns $\left\{ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Wilmington	કું છું	10,000	• • •	21.3			0 1	222	25 24	15	00						122	× 25	0	1 2	213	220	134	51
vns	Wilson	≽່:	3,800					00	01		0 20	00						19		0 1	0	33	- 35	17	n 0
155,700 104 9 47 25 53 10 231 365 141 206 90	Total, 27 towns		91,250 64,450		14.3	18.3		200	32	17	12							546 631	45	111	91	1538	2841	348 478	80
	Grand total		155,700				104	6	47	22								1177	101	16	152	15 2841 -		826	536

TABLE VI-Showing Causes of Death for the Year Ending December 31, 1904.

	-	-				-	-	-	-	-	-	-	-	-		-	-	-	-	-		-	-	1
		Population.		Annual Death Rate Per 1,000.	ual Rate				4	***					'sə	'səsı	'səs			- 11	Total Deaths,		,ears,	
Towns.	Races,	By Races.	Total.	By Races.	Total.	Typhoid Fever.	Scarlet Fever.	Malarial Fever.	Diphtheria.	Whooping-cough	Pneumonia.	Consumption.	Brain Diseases.	Heart Diseases.	Neurotic Diseas	Diarrhæal Disea	All Other Diseas	Accident.	Suicide,	Violence.	By Races.	By Towns,	Deaths under 5	Still-born.
Asheville	3.0.	8,000	13,000	21.0	15.3	. · ·	10	0-	081	1 - 2	0-	100	30 30 30 30	22	00	22	88	4.01	0=	0-	25	   66	127	122
Charlotte	 	11,000	18,200	13.2	16.3	20 10	0	0.0	00	0 1	00	12 10 24 19		15-21 ∞ ∞	6 -	9 6	8.8	ဗဗ		00	145	596	52	328
Durham	Ğ.	8,000	13,000	18.9 37.2	25.9	10	0.0	00	0 -	010	0-1	13 24 19 26		3 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	¢1 st	202	38 28	-10 O	00	-0	151	22	£ 85	9 0
Edenton	Ç.	1,200	3,000	11.7	10.7	00	00	00	0	0.0	00	00		0 0	0-	-0	10	00	00	00	72	61	2121	0
Elizabeth City	 ∴	3,000	8,000	10.4	18.1	0.0	00	0101	0	00	00	.e. e	17.5	9 5	\$1 <b>Q</b>	15	35		0	00	21 23	145	35.	2
Fayetteville	<u></u>	2,500	4,800	15.6 23.9	26.4	20 20	00	- 12		00	00	-=	10 0	5.0	00	-=	27	- 8	00	°-	85.35 1	127	o. 63	- 9
Goldshoro	∑	3,500	6,100	13.7	19.1	6.2	00		ဗက	00	0.0	6116	-10 co	0.00	<b>C</b> 65	9 -	928	- 00	00	-0	÷8	. 911	18	9 =
Greenshoro		6,100	10,100	17.9 36.7	25.3	4 =	00	- 2	0.1	00	0-	17 19 25	1010	12.52	010	0.0	£ &	00 to	00	00	147	556	6185	6. 63
Henderson		2,100	3,800	13.4 20.6	16.6	- 93	00	00	00	08	00	61 83	00	<b>9</b> m	61 C	61.00	£-00		-0	21-	S1 15	33		00
Laurinburg	C. C.	900	1,500	17.8	21.3	0100	00	00	00	00	00		60		0	00	S to	00	00	0	16	32	-0	- 21

TABLE VI-Continued.

				Ann	ual				-			-		_							1 2			
		Population.		Death Rate Per 1,000.	Rate, 000.					*11					·sə:	'səst	.səs				rotar Deaths.		years.	
Towns.	Касеѕ.	Ву Касез.	Total.	By Races.	Total.	Typhoid Fever.	Scarlet Fever.	Malarial Fever.	Diphtheria.	Whooping-cough	Measles. Pneumonia.	Consumption,	Brain Diseases.	Heart Diseases.	Neurotic Diseas	Diarrhœal Disea	All Other Diseas	Accident.	Suicide,	Violence.	By Races.	By Towns.	Deaths under 5	Still-born.
Lexington	) ಸ್ಪ	2008	1,300	13.7	10.8	70	00	00	00	00	00	0-	00		00			00	00	00	220	7		••
Marion	કું.	800	1,200	2.5	25.8	0.0	0	00	00	00	00	0 7	0-	-00	0.0	0.0	13.0	0	00	00	130	31	00	00
Monroe	≽ <u>.</u> Ω	1,850	2,420	7.0	9.4	0	0	00	0 0	00	00	-0	010	-0-	00	m <b>o</b>	P- 53	70	00	00	13		-00	00
Oxford	≽່:	1,250	2,450	15.2 25.0	20.0	0	00	0 1	0 1	0	-00	0 01	-4	8.	0 0 0	34	14	0	00	00	30	49	× =	1
Raleigh	≽ <u>ິ</u> ບ	8,000	13,800	16.2	18.5	- 2	0	00	0 1	00	00	200	25 15	19 8 10	100	801	57	6130	0		021	526	8 29	5 6
Reidsville	≽່:	2,900	4,200	9.3	18.1	081	00	00	0 1	00	00	12	41-	4.21	00	21 21	× 53	00	00	00	27 49	92	10	601
Rocky Mount	≽. ວ.	1,600	3,100	10.0	9.3	00	00	00	00	00			~ rc	80	1 0	21.1	चच	00	00	00	13	53	m 0	0
Salem	≽່ວ.	3,300	3,650	$\frac{12.7}{20.0}$	13.4	00	0	00	0	-00	0.01	80	4-	=0	1 0	90	22 22	010	0	00	7	49	22.2	7.5
Salisbury	≱Ω	2,500	6,400	21.0	20.0	7° 50	00	O m	00	0.0	00	6.9	7	98	111	85	90	ಣಣ	00	00	22.94	82	8 8	1 2
Southport	×	200	1,400	14.0	8.6	0-1		00	0 1	00	00	00	00	20	00	0 1	04	01	00	00	101	12	00	0 0

TABLE VI-Continued.

		Pop	Population,	Annual Death Rate Per 1,000.	Rate 000.	•			. •1					*86	.ses	es.			, D	Total Deaths.		
Towns,	Races.	By Races.	Total.	By Races.	Total.	Typhoid Fever.	Scarlet Fever. Malarial Fever.	Diphtheria.	Whooping-cough	Measles.	Pneumonia.	Consumption.	Brain Diseases. Heart Diseases.	Neurotic Disease	Diarrheal Diseas	All Other Diseas	Accident.	Suicide,	Violence.	By Races. By Towns.	Deaths under 5 y	Still-born.
rarboro	30	2,000	2,500	13.5	19.6	013	00	00	00	100		0.0	0100	190	0 0 0	10	0.01	00	00	123	6	100
Wadesboro	30€	. 1,000	00 1,700	19.0	18.8	00	00	-00	00	00	40	01	00	00	13	10	0 0	00		<u> </u>	잃	0
Washington	  C.€	2,900	5,900	23.1	19.7	40	0.01	00	0 0	00	470	- 52	00 01	7 9	5 6 5	71	- 01	00	00	49 67	116	
Waynesville	<b>≱</b> 5	. 1,600	2,000	5.0	6.5	-0	00	-00	00	00	00	4.0	00	- m	00	~0	00	00	00	=======================================	- 53	21-
Weldon		700	00 1,450	29.3	20.0	01	00	00	00	00	0-		00	0-	6161	± 65	00	00	0~	E- 81	- 61	71-
Wilmington	₹ CC	11,000	21,000	21.8	28.6	4.1-	0-	23	0.1	0 -	222	36	===	19 34 32 32	25.00	1.12	10	21 21	0 m	373 600	141	97
Wilson		3,000	00 6,800	23.0	17.1	08	00	0.0	00	0.0	13.4	61.0	2133	0100	10	និនិ	0.31	00	0-	47 69	 88	
Winston	 C.	6,000	10,500	35.3	23.1	44	70	- 00	4 8	÷ 01	4 5	215	- 2	- La 12	21.02	35	9.1	00	0.0	25 243 243	25.23	15
Total, 28 towns	 C. ₹	. 101,700	173,300	15.2 26.9	20.0	2.8	0.0	21 15	10	พด	126	305	11 17	119 35	218 191	576	52	913	6 15 12	2 3468 36 3468	514	8,9
Grand total	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	173,300	00			122	1 19	S	2	=	307	1 83	201 97	97.9	110	067	×	=	23,450	1 33	2	305

## REPORT OF TREASURER FOR THE TWO YEARS ENDING DECEMBER 31, 1904.

## EXPENDITURES.

190	3.		
Jan.	1.	Amount due Treasurer from last report\$	88.91
	27.	The News and Observer Publishing Company, for	
		Year Books of 1901, 1902, 1903	3.50
Feb.	4.	Salary of Secretary and Treasurer for January	83.33
	7.	Dr. Richard H. Lewis, expenses as delegate to	
		Plague Conference at Washington, January 19.	34.15
	10.	Western Union Telegraph Company, telegrams in	
		January	1.39
	10.	C. T. Bailey, Postmaster, postage on Bulletin	.60
	10.	Stamps	15.00
	11.	Improved Mailing Case Co., mailing tubes for	
		water samples	7.20
March	ı 1.	Salary of Secretary and Treasurer for February.	83.33
	19.	Secretary of State, copy of Bill to Define the	
		Practice of Medicine and Surgery	1.30
	31.	The Sanitarian, subscription for nine copies for	
		Board of Health for 1903	28.00
April	4.	Salary of Secretary and Treasurer for March	83.34
	4.	Office rent, first quarter	15.00
	6.	Stamps	15.00
	9.	Western Union Telegraph Co., telegrams for	
		February and March	1.66
	22.	Funk & Wagnalls Co., one copy "Prevention of	
		Disease"	5.00
	28.	Stamps	10.00
May	1.	Salary of Secretary and Treasurer for April	83.33
	22.	. James A. Egan, M. D., treasurer, annual dues	
		1902-1903 conference of State and Provincial	
		Boards of Health of North America	10.08
June	6.	Dr. Richard H. Lewis, expenses to annual meet-	
		ing at Hot Springs	28.65
		. Salary of Secretary and Treasurer for May	83.33
	12	Dr. George G. Thomas, per diem and expenses,	
		annual meeting at Hot Springs	30.65
	23	. Dr. W. P. Ivey, per diem and expenses, annual	
		meeting at Hot Springs	24.85
	23	. Dr. J. L. Nicholson, per diem and expenses,	
		annual meeting at Hot Springs	54.00

1903	3.		
July	6.	Salary of Secretary and Treasurer for June\$	83.33
	6.	Office rent, second quarter	15.00
	7.	Stamps for Biological Laboratory	7.50
	21.	P. H. Andrews, Post-office Financial Clerk, to	
		secure payment in advance of postage on Bul-	
		LETIN	5.00
	30.	Thomas Whittaker, 1 copy Rosenau's "Disinfec-	
		tion and Disinfectants"	2.18
Aug.	1.	Stamps	10.00
	3.	Salary of Secretary and Treasurer for July	83.33
	4.	Western Union Telegraph Co., telegrams for	
		April, May, June and July	2.20
	5.	A. Williams & Co., sundry supplies	1.90
Sept.	1.	Salary of Secretary and Treasurer for August	83.33
	3.	Western Union Telegraph Co., account for August	.25
Oct.	5.	Salary of Secretary and Treasurer for September,	83.34
	5.	Office rent, third quarter	15.00
Nov.	5.	Salary of Secretary and Treasurer for October	83.34
	5.	Pencils	.25
	9.	Gatchel & Manning, 1 half-tone cut of hook-worm	
		patient for September Bulletin	2.55
	10.	Dr. Richard H. Lewis, expenses to American Pub-	
		lle Health Association at Washington	46.00
	25.	Dr. S. Westray Battle, per diem and expenses,	
		annual meeting at Hot Springs, and expenses to	
		American Public Health Association at Wash-	
		ington	90.15
Dec.	1.	Salary of Secretary and Treasurer for November,	S3.33
	11.	Dr. Francis Duffy, per diem and expenses, annual	
		meeting at Hot Springs	46.10
		Stamps	10.00
		Salary of Secretary and Treasurer for December.	83.34
	31.	Office rent, fourth quarter	15.00
		Drayage on Bulletin to post-office 12 months at	
		15 cents	1.80
190			
Jan.	7.	C. T. Bailey, postmaster, deposit to secure pay-	- 00
		ment in advance of postage on Bulletin	5.00
	15.	The News and Observer Publishing Company, 1	0.00
		copy N. C. Year-Book and Business Directory.	2.00
	15.	The Sanitarian, 9 copies, 1904, for the members of	28.00
	10	the Board of Health	25.00
	19.	E. M. Uzzell & Co., 500 postal eards for printed	
		reminders to the County SuperIntendents of	5.00
	01	Health	15.00
	Z1.	Stamps for bighnar report	10.00

1904	ł.		
Jan.	21.	Dr. George G. Thomas, per diem and expenses,	
		inspection of Morganton institutions\$	19.88
Feb.		Salary of Secretary and Treasurer for January	83.33
	8.	Southern Express Co., charges on packages of	2.00
March	ี	reports to 8 members of the Board of Health  Salary of Secretary and Treasurer for February,	83.3
march		Western Union Telegraph Co., telegrams in February	.60
	19.	Stamps	15.00
April		Salary of Secretary and Treasurer for March	83.3
•		Office rent, first quarter	15.00
		Biological Laboratory, to return money paid out of its fund for cuts for BULLETIN	3.38
	16.	The Maurice Joyce Engraving Co., 1 cut for Bul-	1.0-
	27.	Stamps	15.00
May	2,	Salary of Secretary and Treasurer for April	83.3
	9.	Gatchel & Manning, 1 full-page cut for malaria article	11.50
	9.	Dr. James A. Egan, Treasurer, annual dues to National Conference of State and Provincial	
	13.	Boards of Health	10.00
	14.	March	1.00
		Hill; and Durham (smallpox conference)	22.80
June		Salary of Secretary and Treasurer for May	83.33
	6.	Dr. Richard H. Lewis, expenses to annual confer- ence with Surgeon-General U. S. Public Health and Marine Hospital Service at Washington,	
		D. C	24.00
	7.	Dr. W. P. Ivey, per diem and expenses, annual meeting at Raleigh	33.00
	7.	Dr. W. S. Rankin, expenses, hook-worm investiga-	
		tion in December, 1903	28.30
		Western Union Telegraph Co., telegram in May	.2
	13.	C. T. Bailey, postmaster, deposit to secure pay-	= 00
		ment of postage on Bulletin  Balance due C. T. Bailey, for postage, to 1st of	5.00
		June.	.2
	13.	Dr. Henry W. Lewis, per diem and expenses,	
		annual meeting at Raleigh	27.03
July	2.	Salary of Secretary and Treasurer for June	83.33
		Office rent, second quarter	15.00
		Western Union Telegraph Co., telegrams in June,	1.66
	7.	E. M. Uzzell, 500 printed postal cards	5.00

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July		Southern Railway Co., freight	1.01
		Drayage	.15
		Dr. Francis Duffy, per diem and expenses, annual	
		meeting at Raleigh	29.15
	13.	S. H. Wiley, 1 Foyer Cylinder Letter Press	24.91
	15.	Thomas H. Briggs & Sons, 1 Duplicator	6.35
	16.	Stamps	20.00
	20.	Subscription to Journal of Public Health	1.03
Aug.	1.	Miss Mabel P. Massey, services as stenographer	
		and typewriter, July	5.00
	3.	Salary of Secretary and Treasurer for July	83.34
	4.	A. Williams & Co., sundries for office to 1st inst	4.25
	8.	Western Union Telegraph Co., telegrams in July,	.68
Sept.	1.	Salary of Secretary and Treasurer for August	83.33
	3.	Miss Mabel P. Massey, stenographic work,	
		August	5.00
	13.	T. A. Sills, clerk superior court, fee for list of	
		physicians	1.00
	14.	P. Blakiston's Son & Co., 1 copy "Examination of	
		Waters and Water Supplies"	4.00
	15.	C. T. Bailey, postmaster, stamps for consumption	
		pamphlet	20.00
	24.	Stamps for consumption pamphlet	20.00
	30.	W. H. Brewer, repairs to typewriter	1.00
		Dr. George M. Sternberg, Treasurer, annual dues,	
		The National Association for the Study and	
		Prevention of Tuberculosis	5.00
Oct.	1.	Miss Mabel P. Massey, services as stenographer,	
		September	15.00
	3.	C. T. Bailey, postmaster, stamps for consumption	
		pamphlet	50.00
	6.	Western Union Telegraph Co., telegrams in Sep-	
		tember	1.46
	6.	Salary of Secretary and Treasurer for September,	\$3.33
	6.	Office rent, third quarter	15.00
		Stamps	10.00
		Fees, C. S. C.'s, for lists of physicians	1.75
Nov.	4.	Salary of Secretary and Treasurer for October	83.33
		Miss Mabel P. Massey, stenographic and clerical	
		work in October	21.00
	8.	A. Williams & Co., sundry office supplies	. 2.50
		C. T. Bailey, postmaster, stamps for consumption	
		pamphlets	50.00
	16.	S. H. Wiley, 4 rolls paper for Foyer Press	2.81
		S H Wiley 1 typewriter ribbon	1.00

1904.

Dec. 1. Dr. George G. Thomas, expenses and per dicm	
for inspection of State institutions at Raleigh.	20.00
Oxford and Chapel Hill	\$ 29.30
State institutions at Raleigh, Oxford and	
Chapel Hill	15.40
1. W. P. Ivey. M. D., per diem and expenses for in-	
spection of Wilkes County convict camp	31.20
1. C. T. Bailey, deposit to secure payment of postage	
on Bulletin	5.00
3. Salary of Secretary and Treasurer for November,	83.34
3. Miss Mabel P. Massey, stenographic services in	<b></b> 00'
November	15.00
7. Western Union Telegraph Co., telegrams in November	.50
26. Dr. Richard H. Lewis, expenses, inspection of	.50
State institutions, Greensboro	12.35
31. Salary of Secretary and Treasurer for December,	83.35
31. Office rent. 4th quarter	15.00
31. Miss M. P. Massey, services as stenographer in	
December	15.00
31. Stamps for consumption pamphlets	50.00
31. Dr. J. L. Nicholson, per diem and expenses, in-	
spection of Eastern Hospital	16.00
31. Drayage on Bulletin to post-office 12 months at	1 00
15 cents	1.80 $526.58$
Barance on nand	920.93
•	\$4,000.00
RECEIPTS,	
Appropriation for 1903	2,000.00
Appropriation for 1904.	2.000.00

\$4,000.00

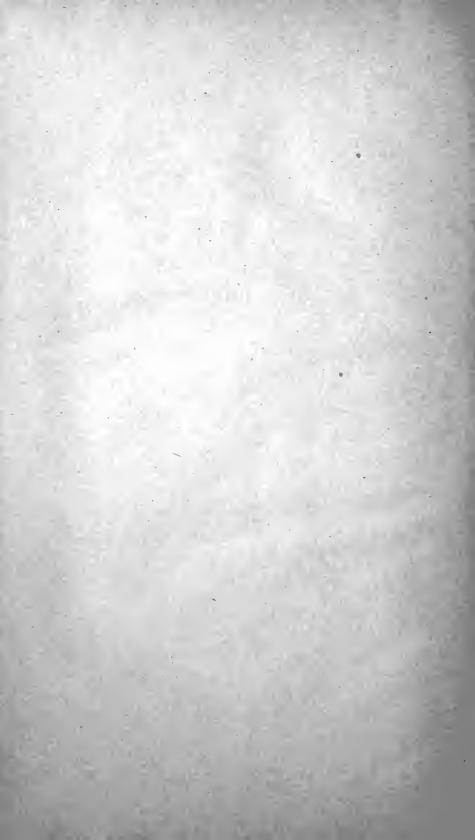
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